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TITLE OF THESIS/*TITRE DE LA THÈSE* TEACHER UTILIZATION OF TIME BETWEEN A SEMESTERED AND NON-SEMESTERED SCHOOL

UNIVERSITY/*UNIVERSITÉ* UNIVERSITY OF ALBERTA

DEGREE FOR WHICH THESIS WAS PRESENTED/*GRADE POUR LEQUEL CETTE THÈSE FUT PRÉSENTÉE* Masters of Education.

YEAR THIS DEGREE CONFERRED/*ANNÉE D'OBTENTION DE CE DEGRÉ* 1974

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TEACHER UTILIZATION OF TIME BETWEEN A SEMESTERED AND NON-SEMESTERED SCHOOL

by

KURT MUELLER

(C)

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF EDUCATION

DEPARTMENT OF EDUCATIONAL ADMINISTRATION

EDMONTON, ALBERTA

FALL, 1974

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled, TEACHER UTILIZATION OF TIME BETWEEN A SEMESTERED AND NON-SEMESTERED SCHOOL submitted by Kurt Mueller in partial fulfilment of the requirements for the degree of Master of Education.

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Date September 26, 1974

ABSTRACT

The main purpose of this study was to investigate the utilization by teachers of time and resources during a forty minute (non-semestered) period and an eighty minute (semestered) period in six grade twelve subject areas: English, social studies, mathematics, biology, chemistry, and French. Analysis of teacher time utilization was made on criteria such as instruction, control, individual and group classroom instructional supervision, individual, group and class laboratory instructional supervision, individual and group library instructional supervision, clerical writing, general clerical activity, teacher and student transition, materials manipulation, and other ways of time utilization. Twenty-three teachers participated in the study, eleven from the semestered high school and twelve from the non-semestered high school.

Descriptive analysis of the observed results were made using averaging techniques. The results indicated that teachers used their time during a class period in this way: 49.9 percent on instruction, 21.3 percent on individual classroom instructional supervision, 8 percent on teacher transition, 5.1 percent on clerical writing, 4.7 percent with a movie projector, 3.4 percent on laboratories, 2.4 percent on general clerical activities, and the final 5.2 percent on other activities.

Little variation was found in time utilization between the teachers of the semestered and non-semestered school on all the criteria investigated. It seemed that the way teachers utilized their time in the eighty minute period was basically the same as during the forty minute period.

A greater variation was observed when a comparison was made of individual subject areas especially in English, mathematics, and biology. In English instructional time was found to be used to a much greater extent in the semestered than the non-semestered period. In mathematics instructional time was also used to a greater extent in the semestered period. However, individual classroom instructional supervision was used to a much greater extent in the non-semestered mathematics period. The opposite was true for biology in which instruction was used much more in the non-semestered period and group laboratory and individual classroom instructional supervision were used to a much greater extent in the semestered period.

The teacher's use of field trips, guest speakers, the library, and audio-visual material varied little between the semestered and non-semestered schools, although teachers in the semestered school seemed to use more and a greater variety of audio-visual material.

Teachers generally tended to be consistent in how they used their time in the classroom. The length of the period had little effect on how the teacher used classroom time. During an eighty minute period the teacher generally repeated his time utilization from the first half in the second half of the period.

ACKNOWLEDGEMENTS

I would like to thank my advisor Dr. E. J. Ingram for the guidance and help he so willingly provided during the course of this study. I would also like to thank Dr. E. Ratsoy for his ideas and assistance and Dr. D. Tucker through whom I started thinking about the idea for this thesis. I would like to thank all the teachers who so kindly consented to my observations in their classrooms. Lastly, I would like to thank my wife who patiently helped me through the course of the thesis.

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Chapter 1

STATEMENT OF THE PROBLEM AND ITS SIGNIFICANCE

The school, often accused of being tradition bound, has been trying to change its methods of organization in order to adapt to an ever changing society. The lecture method has given way to a two-way interaction between teacher and student. Team teaching, open area classrooms, and teacher aides have been instituted in some schools. The forty minute period, which has been the backbone of timetabling has, in some schools, given way to fifty, eighty, and even ninety minute periods. The September to June school year has been altered in some cases to a year-round session, or switched to the August to May period.

One expressed purpose of these changed has been to give the best education to the student in the most economical way. Girard and Enns (1964: 28) mention that:

> One of the concerns of a school system is to improve the effectiveness of learning and at the same time to maintain or increase the efficiency of using resources to achieve such improvement.

The school faces the problem of producing an optimum learning environment with limited resources. It is the teacher, however, who must utilize the structure effectively and adapt readily to changes. Therefore, how the teacher manipulates the method and content to

produce a learning environment becomes very important. For instance, Postman and Weingartner (1969: 19) mention that the critical content of any learning experience is the method or process through which learning occurs.

Students learn in two main ways--by doing and by listening. The former is by and large the better way to learn. It is by direct involvement in a discussion, working in a laboratory, baking a cake or assembling an internal combustion engine that learning is more effective. However, without guidance the student might go about doing things haphazardly, without any thought for efficiency, function, or purpose. The promotion of learning in a meaningful and effective way is the teacher's job and responsibility.

If "learning is only effective if the organism has a chance to explore ideas and information so that these stimuli have personal meaning for him (Frymier, 1965: 193)", then the student will learn something (content, method, social interaction) depending on how the environment influences him. However, if the primary objective of schooling is for the student to acquire a certain amount of knowledge and to use this knowledge to produce intellectual skills of thinking, then the structure of lessons in the time span available becomes very important. Structure is ". . . the extent and way in which he (the teacher) consciously and unconsciously controls various aspects of the process and thus influences learning (Frymier, 1965: 157)."

If teaching is ". . . primarily the deliberate guidance of learning processes for the purpose of enhancing learning outcomes (Ausubel, 1967: 4)," then the way this is accomplished will determine the extent to which anything is learned. Although the best learning

by and large is through direct experience, this is not always possible and, therefore, substitute methods are needed. It would be very easy to learn French in France or the history of Rome in Rome. Since this cannot be done in the restricted environment of the classroom certain aides may be used by the student and teacher as meaningful substitutes. How these aides are used will in all likelihood influence the learning process.

Changes in school organization can influence the learning environment. One of the changes being implemented in a growing number of schools is the semester type of organization. Under the semester system a course which had been conducted for forty minutes a day over the ten month school year has been compressed into five months and the daily period doubled to eighty minutes. The eighty minute period length, as some studies have suggested, seems to have the effect of increasing the need for audio-visual equipment; intensifying instruction and individual attention by the teacher; making more use of library resources, discussion groups, outside resources and field trips, and generally increasing the variety of instructional material used.

It is the purpose of this study to compare the utilization of time and resources by the teacher during a forty minute period in the non-semestered school and during an eighty minute period in the semestered school.

STATEMENT OF THE PROBLEM

The major purpose of this study was to investigate, by direct observation, the utilization of time and resources by teachers in

forty and eighty minute periods in six grade twelve subject areas: English, social studies, mathematics, biology, chemistry, and French.

The study was concerned specifically with the following questions:

1. How do teachers utilize their time during the class period?

2. How does the teaching process differ between the forty minute period and the eighty minute period?

3. How does the teaching process differ between the shorter and longer period in each of the grade twelve subject areas investigated?

4. How does the use of guest speakers, field trips, the library and audio-visual equipment differ between the shorter and longer period?

IMPORTANCE OF THE STUDY

The length of the period has been increased in semestered schools while the length of the course has been decreased. Since the course material has not been changed a greater amount of subject matter must be learned in a shorter time span. The student, although taking fewer courses at any one time, must digest a greater amount of material. Thus, the way in which this longer class period is used in a semestered subject will most likely affect the student's achievement. Since the attention span of most students is not unlimited it is of primary importance that activities be varied during the longer semester period to keep the interest and motivation of students at least at the same level as during the shorter period.

This study provides an analysis of what a sample of teachers

did in the classroom. It gives insight into what teachers are doing during class time and may help teachers in their consideration of class time utilization. It also compared teacher time utilization in forty and eighty minute periods. This may indicate to teachers how time utilization may differ with a longer period. The study could provided administrators with a basic breakdown of how some teachers utilize their time. Since administrators also act as evaluators it may give them a better understanding of how teachers organize their time during a class period. The study compared the time utilization of teachers within and between subject areas. This may provide teachers with information on how other subjects are handled and how other teachers utilize their time in the same subject area. The study focused attention on the various educational aids and how they were used in the two differing period lengths. In addition, the study focused attention on an area of educational concern, the semestered school year. The information provided should be of interest to students, teachers, administrators, and members of the community.

DEFINITION OF TERMS

Traditional School Year

The traditional school year extends over a period of ten months usually from September to June. Each subject is taken for ten months and the period length of daily instruction is approximately forty minutes.

Semestered School Year

In the semestered school year the ten month school

year is divided into two semesters of five months each. Each subject is taken over five months and the daily instructional period length is approximately eighty minutes.

Teacher Time Utilization or
Modes of Time Utilization

The many different ways a teacher uses the time in the classroom involves predefined categories of materials and methods. The definitions of these categories are as follows:

Instruction. The actual time spent by the teacher in involving the whole class using a formal, structured classroom situation where the teacher is talking or answering questions asked by students. The students are generally concentrating on what the teacher is saying. The teacher may be talking and using visual aids at the same time.

Instructional supervision. The teacher is giving individual attention to students or groups of students when students are working by themselves or in groups. The teacher is generally supervising while students are working independently, or in groups on an assignment or project.

Clerical writing. The teacher is copying material on paper, on a stencil, or on the chalkboard at other times than during instruction or instructional supervision.

General clerical activity. The teacher is operating a duplicating machine, assembling and stapling duplicating matter, handing out duplicated matter to students, or assorting marks for students.

Teacher transition. The teacher is changing an activity during the class period such as from instruction to instructional supervision, or to clerical writing, material manipulation, etc.

Materials manipulation. The teacher is transporting, setting up and/or operating movie projectors, tape recorders, television sets, overhead projectors, record players, or other mechanical devices for instructional purposes.

Extended School Year

The extended school year involves a school year operating more than the standard 190 days and thus, students attend school longer, at least 200 days or more.

Year-round School

The year-round school operates throughout the year although students generally attend the traditional 180 to 190 days. The attendance of students is staggered so that one quarter of the student population is on holidays during each quarter of operation.

Chapter 2

REVIEW OF RELATED LITERATURE AND RESEARCH

Learning is the primary purpose of the school. The teacher's job is to promote learning in the atmosphere of the school and classroom with its schedules, time limits, and limited resources. Most changes, especially those concerning time in the school, are geared towards a better schooling environment for the student. The following literature review relates the various aspects of time period changes in the school and the teacher's use of time and resources.

LEARNING AIDS

If as Marshal McLuhan says, "The medium is the message," then it is the type of medium which the teacher uses that will influence the learning of the student. Since a teacher has to cope with the restricted environment of the classroom many different aids may be used as a substitute for actual situations and for the promotion of interest. Davis (1966) summarizes a number of studies on the effectiveness of learning as related to modes of presentation by the teacher. Such modes as movies, film strips, lectures, television, demonstrations, oral and silent reading were used. The modes were also used singly and in combination. Davis (1966: 109) concludes that:

> It seems clear that no one sense modality is capable of ensuring thorough learning. The different modes of presentation tend to supplement and reinforce each other; several modes are often more effective than one. In a simple learning task such as spelling, best results may be expected when the child is asked to say and write the words he is spelling. The accuracy of his pronunciation would also contribute to his total spelling efficiency. Within limits, the greater the variety of sensory avenues brought to bear on a subject or problem the more thorough will be the learning and the higher will be the retention.

The type of medium the teacher uses will undoubtedly influence learning. However, this is not the only factor involved in schooling. Some factors influencing learning are ". . . the extent to which increasing time increases the learning varies with the intelligence of the learner, his purpose in learning, the difficulty of the material, the opportunities for using external aids to learning, and the continuity of the context (Seagoe, 1970: 44)." Although the teacher has some control over the purpose, difficulty, and continuity of the learning material, it is the medium through which the teacher controls the content and, of course, the way in which he handles this flow that will arouse the interest and thus, promote learning in the student.

Besides being able to control the medium the teacher can also control the time in which the medium operates. A longer or shorter time spent in a subject area using audio-visual aids may bore or confuse the student. Interest can be lost quite easily in an eighty minute lecture. Other factors such as accomplishing or understanding a concept might override a student's attention span. An example of this might be found in older children who according to Kounin (1966: 11) require activities of sufficient length to enable them to experience progress in learning and competence.

THE TIME ELEMENT IN SCHOOL

The school system in Canada is set up in such a way that students are supposed to learn between approximately 8:30 AM and 3:30 PM, 190 to 200 days a year, for twelve years more or less. Worth (1972: 200) makes this very explicit when he says:

> There is nothing sacred about these times. While there is some evidence to support certain of these time bases, there is also strong evidence upon which all can be questioned. The whole concept of maturation for learning has been shown to have fewer boundaries than we ever imagined. Intensive learning over a longer school day and a longer school year, properly motivated, can be very productive. Year-round schools and night-shift schools can be effectively operated. Twelve-year programs have been successfully compressed into 10 or 11 years--or extended to 13. The whole idea of a normal learning speed has been upset by continuous progress plans.

Since class periods for any particular subject are of a specified length, "Teachers develop their methods according to available time--introduction: 10 minutes; seat work: 20 minutes; summary: seven minutes; clean up: three minutes (Worth, 1972: 201)." If learning is to be effective the time utilized by the teacher must be varied in relation to the pace of the learner, for the "normal" time of learning varies from individual to individual, from subject to subject, and from day to day. "There is nothing magical about a student's being in class a certain number of minutes per week (Hays, 1968: 291)." Some courses require frequent meetings. Some students can acquire most of the necessary information by themselves without "spoonfeeding." However, timetabling is a basic administrative necessity since it does bring order to a school which only has a certain number of classrooms, a large number of students, and a few teachers.

Time Changes and Achievement

Do the methods of formal schooling account for the major share of knowledge and skills that children acquire? Does time play a great factor in acquiring this knowledge? It is believed by some extended and all-year school supporters, that having a longer school year, week, or day would be of benefit in an educational way to the student. After all, two months is a long time to forget the previous year's material. In a Norwegian study conducted by Husén (1972: 33), which included eleven other European countries, twelve to fourteen year old students received half-time and full-time instruction in mathematics. The results showed that the achievement of those on half-time instruction was slightly less than those on full-time instruction. Husén concluded that time devoted to instruction seems to be almost insignificant in all the twelve countries included in the study.

Changing the length of the period and the length of the course does not necessarily change the achievement of the students. Fehlberg (1968) compared the academic achievement in English 30, Social Studies 30, and Mathematics 30, as measured by the grade twelve final examination, of students taught in the second semester of the 1966-67 school year and those students taught during the conventional term of the same school year. He found no difference in achievement when he compared English 30 and Mathematics 30 under the semester and regular school organization. Only Social Studies 30 achievement seemed to be significantly different in favour of the semester system. However, the higher achievement in social studies was found only in the upper and lower twenty-five percent of the ability distribution. In a similar study

done by Girard (1962) no significant differences were found between achievements on final examinations of students in the trimester system and the conventional system in English 30, Social Studies 30, and Mathematics 30 for the years 1955, 1958, and 1961.

Teacher Time Utilization

How do teachers utilize their time during a period, a day, or a week? Hagstrom (1962: 422) used an activity sampling technique to find out how teachers spend their time. He found that on the average teachers spend 59 percent in class instruction, 25 percent out of class instruction, and 16 percent in miscellaneous activity during a week. Barnes (1966: 131) reviewed a work sampling study done by Paul E. Christensen on 26 teachers in an elementary school in Royal Oak, Michigan. Although the activities were broken down into 34 different elements the major category breakdown was as follows: working with individuals, 6.80 percent; working with groups, 41.07 percent; conference, 4.70 percent; miscellaneous, 16.50 percent; clerical work, 11.03 percent; supervision, 19.80 percent.

Teacher aides reduce the time spent by elementary teachers on clerical activities such as correcting papers, taking roll, housekeeping, making reports, and transition (Stafford, 1962: 88). Activities which required professional training such as lesson planning, group planning, counselling, directed study, pupil control, reading, and supervision increased in some cases. Team teaching may also change a teacher's time utilization. When Gilbert (1968) compared teacher time utilization in a conventional school and team teaching school, he found that there were differences between the two schools in teacher

activities of conducting routine, observing, and transition. The team teaching school encompassed more of these activities than the conventional school.

ORGANIZATION OF THE SCHOOL YEAR

Society's needs in the past have influenced the organization of the school year. In the agricultural areas of Canada during the early nineteenth century many children were occupied on the farm during the spring and autumn; therefore, country schools were only operated for a winter term of six months (Philips, 1957: 242). Since the majority of the population at this time was rural, this reflected certain influences and needs at that time. During the latter half of the nineteenth century, schools were commonly in session for five days a week with a two-week vacation at Christmas and four weeks during the summer. The present September to June school year originated in the early years of the twentieth century. Philips (1957: 243) sees prosperity, consideration for the child, and the establishment of summer schools for the professional improvement of teachers as factors influencing the development of the present school year.

The Semester System

The semester system divides the school year into two terms of approximately 100 days each. The length of the subject instructional time per day is adjusted (doubled) and the total number of units of subject matter to be covered during the conventional ten month term is presented during one five month term. "A five credit subject which in the traditional school year receives 200 minutes of instruction per

week for the entire year is taught in a single semester by offering 400 minutes of instruction per week (Fenske, 1971:19)."

Adoption of the Semester System in Alberta

It is relatively easy for a school or school system to adopt a semester plan of operation. According to the Alberta School Act of 1970 school operation is under the jurisdiction of local school boards. The Alberta School Act (pp. 33 and 60-61) specifies the length of the school day as having no more than 330 minutes of instruction, while the length of the school year should be no less than 190 or more than 200 days. However, the Act leaves the school opening date, the actual number of school operational days, the actual length of the school day, the number of minutes of school operation, and the number of minutes of classroom instruction to the discretion of the school board as long as it stays within the guidelines mentioned.

In 1966 the high school regulations changed enabling all high schools to apply for the adoption of the semester system. Since then many high schools and junior high schools have been adopting this approach to instructional organization. Wynn (1971:28) mentions that the number of two-semestered high schools in Alberta increased from 32 in 1966 to more than 73 percent of all high schools in Alberta by 1971. The number of high schools which operated on a semester system had by the end of 1972 increased to 84 percent of all high schools in Alberta. Only 33 out of a total of 306 high schools were operating on a regular school year.

Advantages and Disadvantages of the Semester System

Many advantages and disadvantages of the semester system have been cited in a variety of sources. For instance, Ellwood (1970:64) mentions a hypothetical example on why the traditional school year does not maximize resources.

> Typically, a horde of students suddenly descends on the library and creates an impossible demand for a limited number of reference books for a few days or weeks. This results when a full grade in one subject area receives a research assignment at the same time. Usually the demand for specific reference books is too great and many students do not get the opportunity to obtain them. Ironically, these same books often lie idle on the shelf for the rest of the year once the urgent demand is over.

Ellwood (1970:78) also gives one of the more comprehensive lists of the advantages and disadvantages of the semester system:

Advantages

1. More effective learning and mastery plus higher student achievement should result from increased frequency of instruction and concentration of instruction.
2. The student's immediate course load at any one time is reduced by half, permitting him to give more attention to those subjects in which he is enrolled.
3. Students appear more motivated by the immediacy of their goals. The end of the course is in sight from the beginning.
4. Semesters provide more scope for the student's enrichment through more course offerings.
5. Semesters provide greater flexibility for remedial work and repeat classes.
6. The semester system offers greater flexibility in adjusting student programs.
7. The semester system appears to cause a decline in student discipline problems.
8. The semester system improves student attendance habits.

9. The semester system appears to improve instruction as a result of better teacher preparation and the removal of unnecessary trivia.

10. Students change their teachers every five months. This can be helpful if there is a personality clash between the student and teacher.

11. Teachers get to know their students better because of reduced pupil loads and the increasing frequency of meeting the students.

12. The semester system usually permits teachers to concentrate on fewer courses during a weekly cycle.

13. The semester system appears to cause a decline in drop-outs and encourages some drop-outs to return to school.

14. The semester system significantly increases the utilization of facilities, equipment and materials.

15. The semester system removes traditional slack periods from the school year and, therefore, makes more efficient use of the time available.

Disadvantages

1. Excessive absenteeism by either the student or the teacher can create a most serious problem for the student.

2. There is a significantly increased workload for the administration.

3. Extended gaps between sequence courses may result in greater retention loss.

4. There is an increased marking load for teachers.

5. Student transfers can be more difficult.

6. Scholarship examination offered only at the end of the second semester discriminates against small and medium sized schools.

7. Teachers may be discontented with receiving spares in only one semester.

Although Ellwood's is a comprehensive list it is not backed up by research evidence. Wynn (1971: 145-150), for instance, found through the analysis of the perceptions of students and teachers only seven

positive and five negative criteria:

Positive Effects of Semestering

1. The students tend to receive more individual attention.
2. The facilitation of the understanding of subject-matter concepts, the mastering of factual material, the facilitation of creativity, and the learning of skills such as typing tended to improve.
3. Teachers tend to be more flexible in their approach to their lessons.
4. The students tend to feel that they put forth more effort in class and in homework, attend more regularly, achieve better marks, and improve their study habits.
5. A new group of teachers and students were met each semester.
6. The teachers may make an evaluation of the previous semester for improvements in the new semester.
7. Allows students to repeat failed courses in the same year.

Negative Effects of Semestering

1. Teachers need more time for marking and examination preparation.
2. Instruction under the semester system is more intensive and puts more of a strain on both teacher and student.
3. Missing classes under the semester system is considered to be more serious since periods are twice as long and presumably twice as much material is covered on the average.
4. The eighty-minute period is too long for the below-average student.
5. Students have trouble sustaining their attention for the full eighty-minute period.

Opinions of Principals, Teachers, and Students on Semestering

Principals. Arnot (1969) found from the opinions of principals a halo effect on those adopting the semester system. Principals who

were planning and working in the semester system saw those items dealing with its advantages to a greater extent than did principals planning not to semester. The principals who were planning not to semester saw the disadvantages to a greater extent. All principals agreed that the longer class period increased the variety of instructional material used and also encouraged more effective teaching. Those principals in conventional schools did not perceive as an advantage that the "longer classroom period makes for a more effective utilization of class time in academic classes (Arnot, 1969:89)." However, all categories of principals agreed that the longer classroom period makes for easier scheduling of laboratories. Principals of semestered schools and those planning to semester perceived that (Arnot, 1969:89):

> . . . the longer period permits a subject to be studied in greater depth, a student feels greater satisfaction when able to pursue a topic through a longer period of time, and a teacher feels greater satisfaction when able to pursue a topic throughout a longer period of class time.

Teachers and students. Wynn (1971) analyzed the opinions of students and teachers of the semester system in the Edmonton Public School System. According to his findings the teachers felt that instruction was more intensive in semestered classes, more audio-visual equipment was needed, and more individual attention was possible. Students generally agreed with the teachers in these categories but ". . . also reported that in academic subjects generally, the learning situation was superior (Wynn, 1971:61)."

In regards to the eighty-minute period both teachers and students had overall positive reactions. Both teachers and students

perceived that the eighty-minute period:

> . . . required and allowed the use of more audio-visual equipment; allowed for more discussion groups, student research projects, guest speakers and field trips; allowed the teachers to be more flexible in class, and provided more opportunity for the teachers to give individual attention to the students. (Wynn, 1971:124).

A majority of teachers felt that the longer class period was too long for the below average student. Although the students said that the eighty-minute period provided more opportunity to work at their own pace, it also provided greater amounts of work. The teachers reported that they tend to be more flexible in their approach to their lessons possibly because the longer class period demands the use of a variety of approaches to keep the attention of the students. The semester system and the longer period tend to change the instructional approach of the teachers. Wynn (1971:153) concludes that:

> . . . many of the advantages attributed to the semester system, generally are perhaps in reality due more to the use of the eighty-minute period. The longer period tends to give the teachers more time to do many things that were difficult to accomplish in the shorter period. Field trips, guest speakers, laboratory experiments, and student projects can all be better accommodated by the longer period.

Piwowar (1970) studied the perceptions of students and teachers in traditional composite high schools and semestered composite high schools. His findings indicate that (p. 143):

> Semestering students perceived advantages as existing to a greater degree than do non-semestering students within their own school situation in areas of utilization of staff, programming flexibility, utilization of equipment and facilities, satisfaction with interpersonal relations, instruction, and learning.

The perceptions of students and teachers in the semestered schools were more in agreement on the criteria presented than those in non-semestered schools. Students and teachers in semestered schools also

saw more time available for individualized instruction. Piwowar (1970: 154) concludes that students in semestered schools are happier with their learning environment than are students in conventional schools. He postulates that this could be due to the more open climate or freedom from schedule rigidity. The length of the class did not appear to be directly responsible.

Junior high schools. Krupa (1971) studied the perceptions of students in a junior high school semester system in Calgary. According to his findings students felt that social studies, mathematics, language arts, science and French were better suited to the semester system than the regular school year. According to many students the longer class period also contributed strongly to the better understanding of the subject matter.

In a similar study done by Kendall (1972) on the perception of teachers favorable responses were given by most teachers. The most favorable observation seemed to be increased personal interaction between teacher and pupils. However, there were significant differences in the teachers' opinions. For example:

1. Students interest in a subject remains high all through the course.
2. There is insufficient time to finish all course work in some subjects.
3. The way the school is organized enables many students to do independent study in the library.
4. There is a large number and variety of course combinations from which students may choose to suit their needs, interests, and talents.

Modification of the School Year

The modification of the school year to a semester, trimester, or quarter organization will influence the change of a period length from the standard forty minutes to sixty, eighty, or more minutes depending on how much time is needed to cover the course. Changing the 190 day school year into an extended or year round school may also lengthen the classroom periods. The teacher must in some way adopt to the longer period and use it in such a way that the learning environment is relatively stable and benefit student achievement.

Fenske (1971:14) mentions that:

> There are two basic reasons for re-scheduling the school year: to obtain more efficient and economical use of staff and facilities, and to improve educational programs for students.

The extended school year plans seem to stress more the educational aspect, while the all-year school plans stress more the economic aspects in trying to justify their advantages. The "calendar-makers" are divided into three distinct groups; those that want to maximize the use of facilities and buildings to save money, those that want educational advantages, and those that see merit in both areas. This third group does not look to calendar making as the ultimate change but sees changing modes of teaching, different roles for teachers and different teaching and learning techniques which will require changes in the calendar (McKenzie, 1971).

The Year-round School

In general the year-round school is divided into four quarters involving a 12/52 system in which three-fourths of the students are in attendance during each quarter and one-fourth are out of school

(McCarty, 1958). Such a twelve month rotating plan was considered by many school systems because of increasing enrollments, teacher shortages, and increased building costs. According to McCarty (1958), Ernst (1971), the Report to the Washington State Legislature (1970), and the NEA (1968), there are various advantages and disadvantages in the year-round school:

Advantages.

1. Makes use of facilities which lie idle during the summer.

2. Relieves overcrowding.

3. Such plans might make the construction of additional schools unnecessary.

4. Savings in debt service, insurance costs, heating costs due to less classroom space being needed.

5. Teachers are employed the full year which would increase salaries and professional status.

6. The all-year plan can be operated with no detrimental effects upon the quality of planning, achievement by the pupils, or upon the physical growth and development of the student.

7. Some students might be able to progress through the schools more rapidly.

Disadvantages.

1. Fixes the number of days that a pupil may attend during a normal school year.

2. Arbitrary assignment of vacations could cause problems especially if children in some families would not get their vacation at the same time.

3. Building repairs, maintenance, painting and cleaning would complicate and cause interruption in school programs.

4. Administrative problems such as orienting new teachers, processing transient children, maintaining continuity in educational development, scheduling curricula and extracurricular revisions, and determining staff vacations would be complicated.

5. Air conditioning would be needed.

6. Acceleration might be a hindrance since younger graduates will find difficulty in finding jobs.

7. Demands major changes and improvements in curricula.

All-year school plans could have a monetary saving in the long run, but an increase in cost of salaries, supplies, plant operation, maintenance, and transportation immediately (Kells, 1967, MacIntyre, 1971, McKenzie, 1971, McLain, 1971, Stefanich, 1971). However, MacIntyre (1971:40) stresses that "sixty-six years of U.S. experience indicates that a 12-month school system is more expensive, per pupil served, than a 9 or 10 month system." The aim of these plans is toward a better utilization of the school year.

Extended year plans. As compared to the year-round school, which in essence keeps the attendance to the traditional 180 days, the extended year plans increase the attendance of the students to above 200 days. Almost all extended year plans include some year-round aspects and vice versa. For instance, both types of plans try to obtain better utilization of school facilities.

Educational advantages. A continuous or extended school year would utilize the summer holidays which according to McKenzie (1971)

provide a wonderful time to forget the previous year's work. Students who have failed a course can repeat this course during the same year and do not have to wait till next year. Such plans would also permit a greater flexibility in planning student programs, scheduling courses, and activities for students since more time is available and the organization of the school year has changed.

Types of plans. There are various extended and all-year plans. For instance, Coutts and Bergen (1969: 23) proposed a school year operation with two semesters and an optional summer school program for high schools. Christmas would provide the semester break with the colleges and universities providing admission to high school graduates in the summer and mid winter. Stefanich (1971: 14) proposed a seven-session plan as an all-year operation. In this plan schools would operate the entire year and each student would attend five of the seven sessions. Hurnard (1972: 13-15) describes four "Term Rotation Plans" in which only a portion of the student body is in school at any one time:

1. Staggered Quarters. In this plan 25 percent of the student body is on vacation at any one time. (the plan follows McCarthy's definition of a year-round school)

   In the following plans 20 percent of the student body is out of school at any given time.

2. The 8-9/2 Plan. In this plan there are 8-9 week sessions with 2 weeks between sessions, together with a 4/52 vacation for each group of students at some time during the summer.

3. The 8/2 Plan. This plan provides a common vacation for all groups during the summer.

4. The 45/15 Plan. Students would be in school for 45 days and vacation for 15 days. There would also be a provision for a common vacation in the summer.

Hurnard (1972), Fenske (1971), McLain (1971), and Wynn (1971) discuss extended year plans in their various articles and mention some of the problems which may occur if implemented. The following is a summary of their ideas.

1. Continuous school year or continuous progress plan. This plan is based on a 210 day school year with 180 days being spent on the year's work and the remaining thirty days being spent on the following year's initial work. Students would not be failed and would be required to satisfactorily complete small modules of instruction. Problems would result if students were to transfer from a continuous progress plan to a graded system. This type of plan will also require more time spent on planning, organizing, and supervision of individual student programs.

2. Multiple trails plan. This plan is based on a 210 day year and may be implemented in four stages using multiple time modules. Classes are able to meet less often thus classroom space is released and teacher and pupil load is decreased. However, the plan requires vast curriculum revisions and continuous effort to keep the continuous progress aspect moving. This plan might be difficult to implement since it was designed basically for use in the secondary schools. It would appear to have a limited application to our elementary school situation. In a sense, at the secondary level it provides the advantages of a modular schedule along with possible extra time for improving fundamental skills, exploring in depth some other subjects, taking subjects not otherwise available, and acceleration.

3. The quarter or quadrimester plan. This plan involves a school year of 204 to 225 days divided into four terms. This system would spread the quarters throughout the year so that there would be a Christmas break and a summer vacation. There would have to be curriculum adjustments to fit courses into the quarter length.

4. The semester plus modified summer school plan. This plan promotes student acceleration by implementing a summer school and results in a school year of about 220 days. The summer school is optional but allows the keen student to accelerate. The voluntary summer school does not usually require full plant use and thus costs may rise.

5. The trimester plan. This plan involves a school year of 204 to 225 days divided into three terms. The plan allows for pupil acceleration by increasing the length of class periods and/or the school year.

6. The extended K-12 plan. This is a composite of other extended school year designs and involves a 204 to 225 day school year. Grades K-6 use the extra school days for enrichment and grades seven to twelve operate on a trimester or quadrimester plan. One year of schooling out of thirteen is eliminated. Daily class periods are lengthened, and more staff is sometimes required to provide enrichment.

There are many school year plans in existance but very few in operation. The Coutts and Bergen (1969) proposal seems to have been implemented in the large urban school systems of Alberta. A trimester system has been in operation in Red Deer since 1949. A quarter system

exists in the Institutes of Technology in Alberta. The colleges and universities operate on a two semester plan with an optional spring and summer session. However, most elementary and junior high schools in Alberta still retain the traditional school year while most high schools are on the semester system.

Flexibility of the school year is desirable in any changes from the traditional pattern. McLain (1971:475) feels that:

> The Flexible All-Year School probably will emerge as the institution most capable of meeting the educational needs of a technologically advanced, rapidly changing society because it is designed to adapt to the needs of the individual and the changing society and because it is designed to make optimum use of time. In the long run such a school likely will be the most economically efficient as well.

However, McKague (1971:31) describes why the year-round school operation is difficult to accept:

> A year round program must satisfy criteria by our maturing science of human nature, our exploding areas of knowledge, and our deepening complexities in social interaction. Unless a longer school year would enable us to bring children into closer communion with these three aspects of our culture, it would seem to be only a monetary device, a concession to those who demand better education but feel that the school leaders should devise a means for financing it that avoids additional costs.

Three factors must be borne in mind when considering school year reorganization; ". . . the quality of the program to be maintained; the amount of freedom to be accorded individual learners; and the degree of autonomy to be exercised by local and institutional authorities (Worth, 1972:116)." Worth (1972) does not commit himself to any one of the extended and all-year school organizations, but briefly describes each and cites some of their advantages and disadvantages. However, Worth (1972:117) would like to see changes in the school year even though . . .

Alberta educators and elected officials tend to shy away from requiring student participation in a year-round operation because job opportunities peak in the summer, winter vacations are not acceptable, and synchronizing vacations for families with children in different stages of schooling would be difficult.

SUMMARY

The medium through which the teacher communicates with the students will undoubtedly influence their learning. Be it lecture, demonstrations, television, film strips, movies, or individual interaction the time spent on each activity individually or in combination will produce an environment of interest or disinterest. Since the teacher must cope within the restrictions set by a timetable and the classroom unit, his organization through a set time and the medium of communication are vital in producing an environment conducive to learning.

Changing the amount of time spent by the student in school does not seem to increase his achievement, but also does not hinder his ability to achieve.

It is interesting to note that teachers spent only about 50 percent of their time in school interacting with students in a teaching-learning situation. Teacher aides and team teaching situations change the way a teacher utilizes his time. Clerical activity by teachers is reduced with teacher aides, while in team teaching observing, transition, and conducting routine are increased.

The organization of the school year in Alberta has changed through the adoption of the semester system. This system has become the standard high school organization in Alberta since 84 percent of all high schools had adopted it by the spring of 1973. Its advantages

and disadvantages are numerous but most teachers and students seem to favor the semester system. Whether this is due to the longer class period (Wynn, 1971:153) or the more open climate or freedom (Piwowar, 1970:154) is yet to be established.

Many modifications of the school year have been proposed but few have been implemented. Some stress monetary savings while others stress educational benefits or both. The year-round school plans came about because of increasing enrollments, teacher shortages, and increased building costs. A better utilization of facilities was proposed with a monetary saving over a long term basis. Flexibility of courses and programs, less time to forget in the summer, and being able to repeat a course, have been given as educational advantages. A year-round school program to be implemented must be acceptable by the society it serves. Flexibility and voluntary attendance, especially in the summer, seems to be the key to acceptance of an extended and year-round organization of education.

The following study involves an inquiry into school time organization, the period length and how it is utilized by teachers. The information acquired on teacher time utilization may be related to the organization of the school day, week, and year through a better understanding of what constitutes a classroom learning environment. Time can be a critical factor in achievement. The teacher must make optimal use of school time to create a learning environment favorable to all students.

Chapter 3

DESIGN OF THE STUDY

SYNOPSIS OF THE PROBLEM

The way in which the teacher uses time during the class period is very important in producing a learning environment for the students. A change in period length from the traditional forty minutes to a semestered eighty minute period could be a factor in changing the media mix that the teacher uses to keep the attention of students. Although one might think this is what is preferred, it might be advantageous just to have more of the same media mix (lecture, individual work, films, etc.) in the eighty minute period as in the forty minute period.

This study gathered information on how teachers utilize their time in a class period. It also compared the use of time by teachers in forty minute and eighty minute periods and in addition, compared the use of time by teachers within subject areas. Finally, this study compared the use of materials, facilities, and other resources in forty minute and eighty minute periods.

THE INSTRUMENT

The data gathering instrument (see Appendix A) consists of

three parts:

A. Teacher Activities (general)

B. Materials Manipulation (specific)

C. Other Ways of Time Utilization

Part A consists of instruction, instructional supervision--in the classroom, laboratory, and library--clerical writing, general clerical activity, teacher transition, and student transition. Although control was included actual times were not recorded since at this grade level it presented no problem. In student transition the students themselves initiate an activity change without teacher involvement.

Part B involved the teacher operating, transporting, and manipulating various audio-visual equipment and materials such as maps, models, and equipment used for demonstration before the class. Some of the audio-visual equipment such as the movie projector, television set, tape recorder, or the combination of record player and film strip projector can be instructional implements by themselves without teacher-student interaction.

In Part C such teaching aids as guest speakers, field trips and other observations were recorded.

Development of the Instrument

The development of the research instrument for collecting the data involved a modification of Hagstrom's (1962: 423-425) definitions of things that teachers do during a school day. Hagstrom (1962) divided teacher activities into eighteen categories; conducting routine, control, presenting information, instructional supervision, non-

instructional supervision, observing, interacting with adults, reading, writing (creative), writing (clerical), materials manipulation, transition (pupils), transition (teacher), travel, personal, no interpretable activity, and unable to observe. The instrument used by the author was constructed using the above categories which were suitable only for a classroom situation and apply to a secondary school.

The research instrument was further developed and modified on the analysis of Gilbert's (1968: 30-38) instrumentation used in his study of time utilization in a conventional and team teaching school. Gilbert (1968) used a work sampling technique in which a large number of observations were taken at random intervals. Work sampling is described by Heiland and Richardson (1957: 1) as:

> . . . a measurement technique for the quantitative analysis, in terms of time, of the activities of men, machines, or of any observable state or condition of operation . . . .
> . . . in taking the observation, the state or condition of the object of study is noted and this state is classified into predefined categories of activities pertinent to the particular work situation.

Gilbert (1968) used a check (✓) to mark the activity on a data sheet. In this case the observer would randomly go from one teacher to another and mark down the observed activity. This continued over a period of three weeks.

The instrument the author worked out included actual teacher time used during a class period. Some check marks were used for one minute and half minute intervals. However, actual times such as for example 10:30--10:35 were used more frequently to lessen the confusion of what activity happened at which time.

The instrument was tried out on ten student teachers during the months of October and November, 1972. It was further revised and

modified as a result of suggestions by the faculty advisor, graduate students, and the pilot study. Definitions of the various sub-divisions of the instrument are given in Appendix B.

A short personal and professional data questionnaire was also developed to compare this sample of teachers to the larger high school district teacher population. This may indicate how well the sample reflects the larger population in such areas as age, sex, marital status, years of university and professional education, major field of specialization, years of teaching experience, and teaching assignment. The use by the teacher of field trips, guest speakers, library, and audio-visual equipment was examined through four questions in the teacher questionnaire since these might be difficult to ascertain. A copy of the questionnaire is given in Appendix C.

This questionnaire was given to the twelve teachers in the non-semestered school and eleven teachers in the semestered school who had agreed to be observed. Two teachers in each of grade twelve English, social studies, mathematics, biology, chemistry, and French in the non-semestered school were asked to fill out the questionnaire. The same process was performed in the semestered school except that only one teacher agreed to be observed in biology reducing the sample to eleven teachers.

COLLECTION OF DATA

Once the questionnaire and instrument were ready contact was made, through an explanatory letter, with each principal of the two schools involved. The two schools involved in the study were selected by the school board office. The selection was also dependent on the

willingness of the principal and teachers in each of the schools to participate. An example of the letter is given in Appendix D. An interview was arranged with each principal. From this interview a time was arranged to meet the teachers as a group in each school to explain the purpose of the study and to complete the teacher questionnaire.

The observations and recordings on the instrument in the classroom started during the second week of February, 1973 and were completed during the first week of May, 1973. No observations and recordings were made during the five weeks of student teaching in February and March, 1973 or during the Easter holiday in April, 1973.

The observer drew up a timetable to visit each teacher during these months. Four observations of each teacher were made. Although the teachers knew the observer was going to observe them they did not know the exact time. The observer entered the classroom at the beginning of the period and left at the end of the period, thus disturbing the class very little.

One of the problems was, of course, that the teacher and students tended to behave differently when the observer was present. The observer felt that his presence did very little to change the behavior of the teacher and students. The only difference in behavior noticed by the observer was that the teacher and some students would talk to him. Even if the behavior would have been changed it would have been better to observe the class than not to observe directly. Medley and Mitzel (1963:308) explain changes in behavior due to the presence of an observer in this way:

> One criticism sometimes made of measurements based on direct observation is that they lack validity because the behaviors are not representative of normal classroom behavior. Teachers and pupils, it is argued, behave differently when a visitor is present. . . .This argument has merit but should not be taken too seriously. To know how teachers and pupils behave while they are under observation seems better than to know nothing at all about how teachers and pupils behave.

The twelve teachers in the non-semestered school and the eleven teachers in the semestered school were each observed four times. The non-semestered school period was forty minutes long and the semestered school period was eighty-three minutes long. Total observation time was 5572 minutes (92 hours--ten minutes), or the equivalent of 15 full six hour school days.

DELIMITATIONS

1. This study was delimited to the observation of twenty-three teachers in two schools - one semestered and one non-semestered. Each of these teachers was observed during four separate teaching periods.

2. This study was also delimited to six grade twelve academic subject areas - English, social studies, mathematics, biology, chemistry and French.

3. Finally, the study was delimited to the specific criteria as outlined in the instrument.

LIMITATIONS

1. This study was limited to a small, unrepresentative sample of the teacher population; therefore, generalizations cannot be made.

2. This study was also limited to the measurement of teacher use of time and audio-visual material and conclusions pertainning to instructional superiority to either system cannot be made.

THE SAMPLE

The selection of the sample of 23 teachers, 12 in the non-semestered school and 11 in the semestered school, depended on the willingness of the teachers to be observed. All teachers volunteered to participate in the study. In the semestered school two of the eleven teachers were department heads, while in the non-semestered school three of the twelve teachers were department heads.

Table 1 compares the sample of 23 teachers of each department in relation to each school. A percentage of sampled individuals as compared to the greater population in each department was calculated to see how well the two schools matched in the sample of teachers drawn. The samples from each school are matched evenly at 18 percent. There were slight differences between the same departments of the semestered and non-semestered school ranging from no difference in the departments of mathematics to a difference of 6 percent in the departments of science. Otherwise the differences were minute, indicating the samples drawn from each school compare quite evenly.

Personal and Professional Data

Table 2 presents the information from the questionnaire given to the 23 teachers. Altogether there were 20 males and three females. Two males in the non-semestered school were single, while the other 21 teachers were married. The teachers' ages ranged from 24 to 54 years with a mean age of 34.1 years. The teachers in the semestered school were younger with a mean age of 31.2 years as compared to the non-semestered school which had a mean age of 36.7 years. There was only a

Table 1

Percentage of Teachers Sampled in Each Department and Total School

Department	Semestered School	Non-semestered School
English	25	20
Mathematics	25	25
Social Studies	25	20
Science	30	36
Modern Languages	33	28
Total School	18	18

Table 2

Personal and Professional Data
N 23

Variable	Semestered School	Non-semestered School	Total
Males	9	11	20
Females	2	1	3
Married	11	10	21
Single	--	2	2
Mean Age	31.2	36.7	34.1
Mean Years of Professional Education	5	5.3	5.2
Mean Years of Teaching Experience	8.9	10.1	9.5

slight difference between the sample of teachers of the two schools in their mean years of professional education and mean years of teaching experience.

Table 3 presents information on the larger urban high school system from which the sample of 23 teachers was drawn. The sample included only three females. Since the ratio of males to females in the larger population was 2 to 1, a more representative sample would have included about seven or eight females. The sample does, however, reflect more the greater population in such areas as years of professional education (in which the sample has a mean of 5.2 years as compared to the greater population mean of 4.7 years), and years of teaching experience (in which the sample has a mean of 9.5 years as compared to the greater population which has a mean of 10.5 years). The sample had a mean age of 34.1 as compared to the larger population which had a mean age of 38.1 years. The non-semestered sample of teachers seemed to reflect the greater high school population more in marital status, age, and years of teaching experience. The semestered sample of teachers reflected the greater high school population more in the ratio of males to females and years of professional education.

TREATMENT OF THE DATA

The actual times as recorded on the instrument (see Appendix A) were converted into percentage of period time. Thus, if the teacher instructed the class from 10:00 to 10:10 and then again from 10:20 to 10:30, total instruction time for that period was 20 minutes. Appendix A includes an actual example of how a teacher used his time in a semestered period. If the period length was forty minutes the

Table 3

Personal and Professional Data of the
Large Urban School System--
High Schools only
(1972-1973 school year)

Variable	Percentage		
	Single	Married	Other
Males	11.1	84.6	4.3
Females	24.5	64.3	11.2
Mean Age			38.1
Mean Years of Professional Education			4.7
Mean Years of Teaching Experience			10.5

instructional time utilization would have been 50 percent. If the instructional time in an 83 minute period was 20 minutes, the instructional time utilization would only be 16.6 percent. It is important to remember that the data analysis is in percentage of class time. Since the semestered period is longer the actual time utilization is greater here than the percentages might suggest.

After a period of observation the percentages of time utilization were immediately calculated and recorded on summary sheets as exemplified in Appendix E. The mean of each time utilization variable was calculated by dividing the total number of observations in a subject within each school (these were eight except for semestered biology) by the total time the teachers spent using that medium. The total number of observations included the total number of visits even though certain variables were not used all the time. Thus, if during the eight observations of English 30 in the non-semestered school the film strip projector was only used twice, the percentage time use of the projector would be totaled and divided by eight to obtain the mean for that medium in that subject and school.

SUMMARY

This study was designed to collect and analyse information on how 23 teachers utilized their time in a forty and eight-three minute period. Four observations of each teacher were made over a three months period and the results recorded in both actual and percentage of period time for each variable in the instrument. The 23 teachers were also asked to complete a short questionnaire whose purpose was to gather personal and professional data and to gain information on how

teachers used guest speakers, field trips, the library, and audio-visual equipment. Each of the sample of 12 non-semestered teachers and 11 semestered teachers represented 18 percent of the total school population. The sample of teachers from each department between both schools was very similar, ranging from no difference to 6 percent difference. In comparing personal and professional data of the sample to the total school district high school population similarities were found in years of professional education and years of teaching experience, and differences were found in the ratio of males to females and the mean age.

Chapter 4

TEACHER TIME UTILIZATION

One of the purposes of this study was to examine how teachers utilize their time during a class period. Although some teachers were quite consistent in the way they used their class time from observation to observation others varied to some extent. This may have been due to chance since only four observations on each teacher were made. However, since each observation was done as randomly as possible and over a three months period a variety of situations were observed and recorded.

TOTAL TEACHER TIME UTILIZATION

The overall means for each variable are given in Figure 1. These teachers seemed to use instruction as the most common mode of transferring information in the classroom. Fifty percent of a forty or eighty minute period was spent on instruction. Over a fifth (21.3 percent) of class time was spent on individual classroom instructional supervision during which the students were working individually and the teacher helped with the work on a one to one basis. Eight percent of class time was used for teacher transition in which the teacher changed activities from instruction to individual classroom instructional supervision, from individual classroom instructional supervision

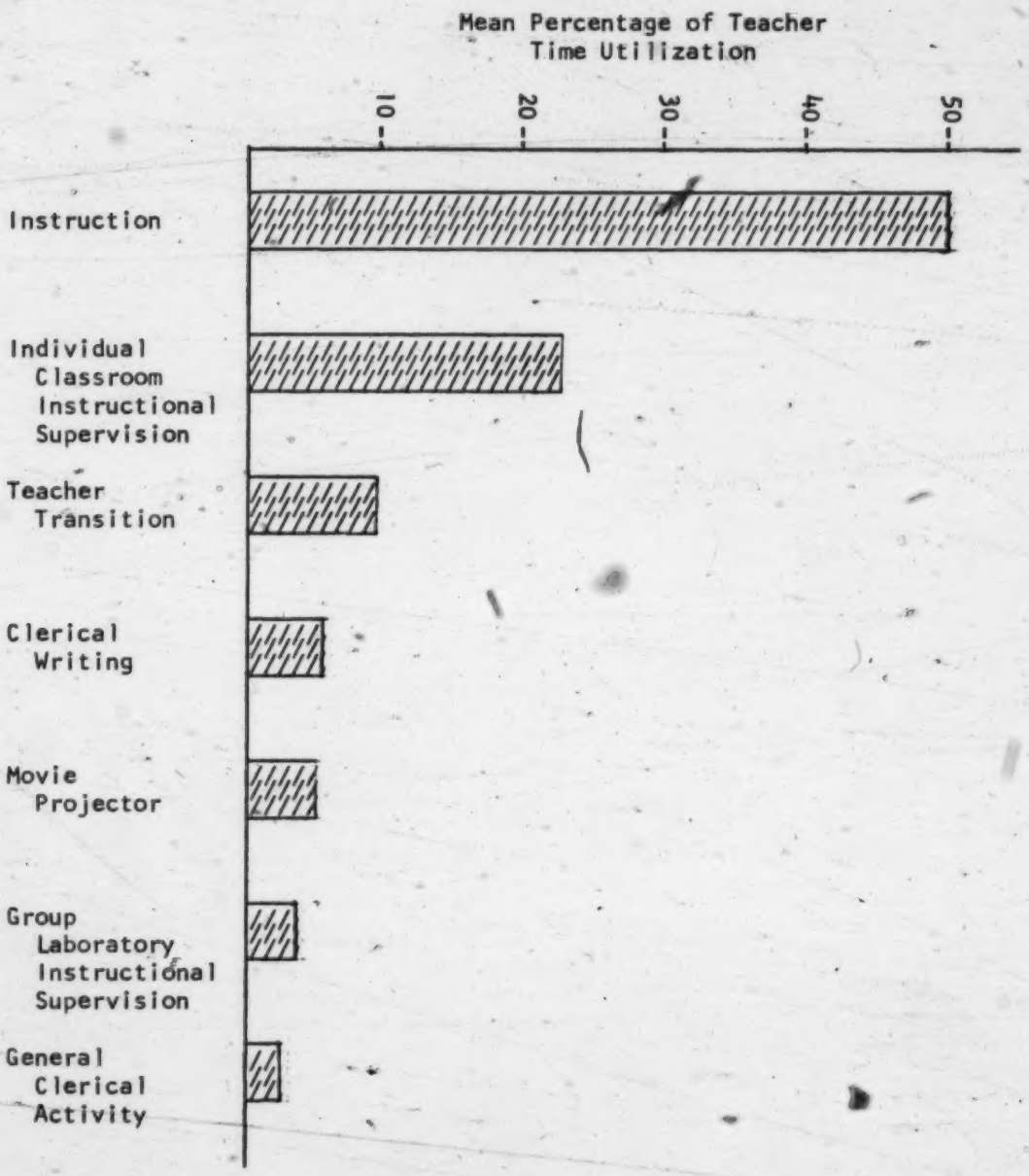

Figure 1

Total Teacher Time Utilization
N=23

back to instruction, from instruction to clerical writing and so on. The most common type of transition was from instruction to individual classroom instructional supervision and vice versa. However, while the students were working by themselves the teacher sometimes used this time for clerical writing or other clerical activities. About 5.1 percent of class time was spent on clerical writing. The movie projector as a means of instruction was used 4.7 percent of class time. Usually the teachers projected and watched the movie. The use of laboratories was found to take up only 3.4 percent of class time. Laboratories were only used in biology, chemistry, and French. Finally, the handing out of duplicated matter, information, or tests (general clerical activity) involved the use of about 2.4 percent of class time.

The last five percent of teacher time utilization was spread thinly among group classroom instructional supervision at 1.3 percent, individual laboratory instructional supervision at 1.3 percent, classroom laboratory instructional supervision at 1.2 percent, the tape recorder at 0.8 percent, and the record player at 0.4 percent.

Audio-visual Material as an Aid to Instruction

The amount of audio-visual material used in conjunction with instruction or as an aid to instruction was 7.5 percent out of the mean total of fifty percent of instruction. Therefore, 42.4 percent of instruction time was used as teacher lecture with or without the use of the blackboard, and/or question-answering sessions with individual or groups of students but involving the class as a whole.

Figure 2 presents the breakdown of the 7.5 percent of audio-

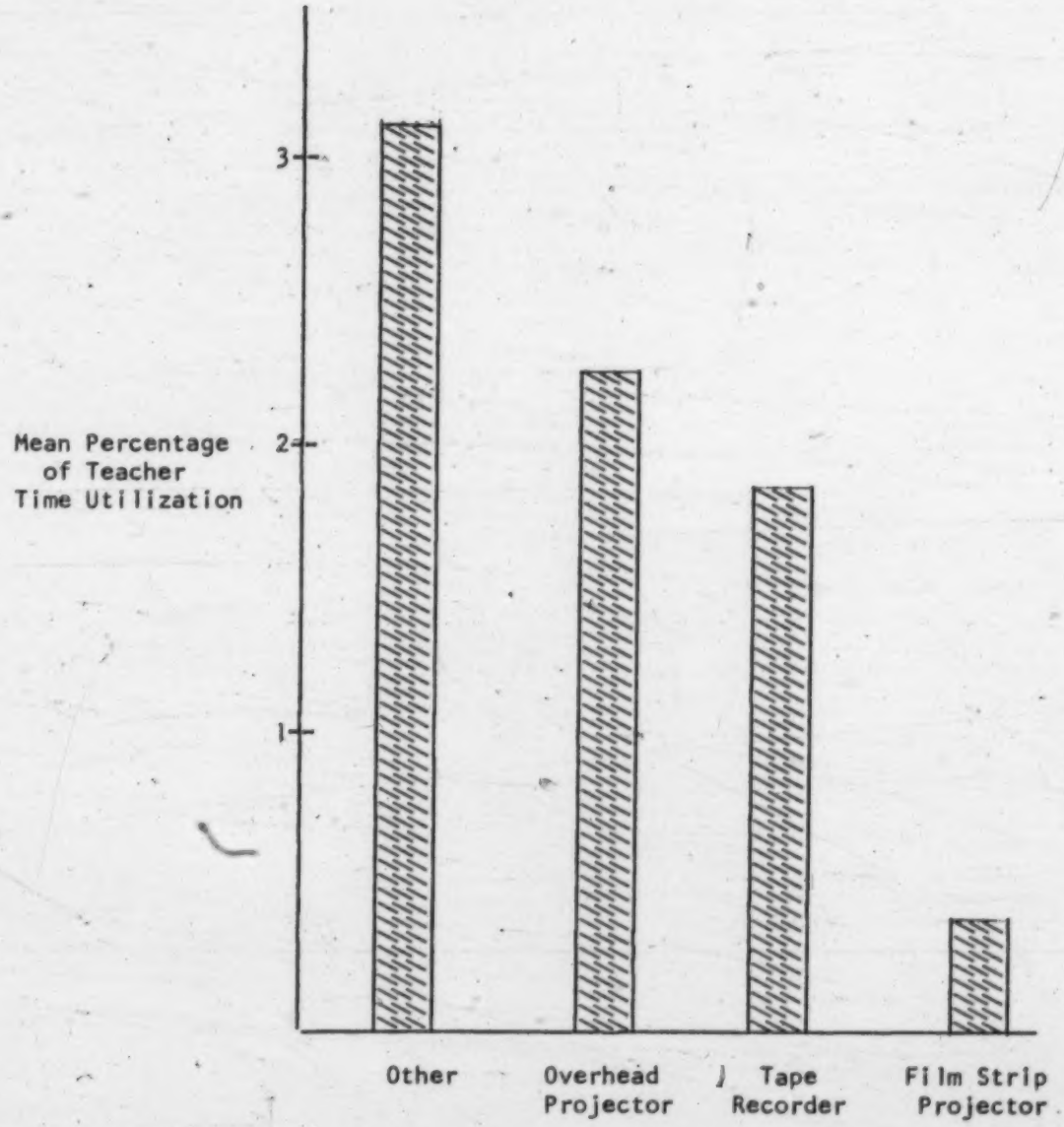

Figure 2

Audio-visual Material Used in Conjunction with Instruction

visual material used with instruction. At the top of the list is "Other" at 3.1 percent. This encompassed such things as a map in social studies, charts and diagrams in biology and chemicals, test tubes, beakers, etc., as demonstrative material in chemistry. The overhead projector which was used in mathematics, biology, and French contributed 2.3 percent. The utilization of the tape recorder in conjunction with instruction took up 1.8 percent of class time. It was observed to be used in French only. The film strip projector as an aid to instruction took up 0.3 percent of instructional time and then only in biology.

COMPARING TEACHER TIME UTILIZATION BETWEEN THE SEMESTERED AND NON-SEMESTERED SCHOOL

A second purpose of this study was to find out how the teaching process differed between the longer and shorter instructional period in the two schools. In the semestered school the period length was 83 minutes while in the non-semestered school the period length was forty minutes. When considering the mean modes of time used by the eleven teachers in the semestered school and the twelve teachers in the non-semestered school only slight differences were found. The two schools are compared in Figure 3. Instruction was used the most in both schools with the semestered period having had a slightly greater utilization (53.23 percent) as compared to the non-semestered period (46.81 percent). This indicated that the semestered period had eight percent more instruction than the non-semestered period. Since the semestered period was 83 minutes long the instructional time totaled 44 minutes. Although the 44 minutes of instructional time may have

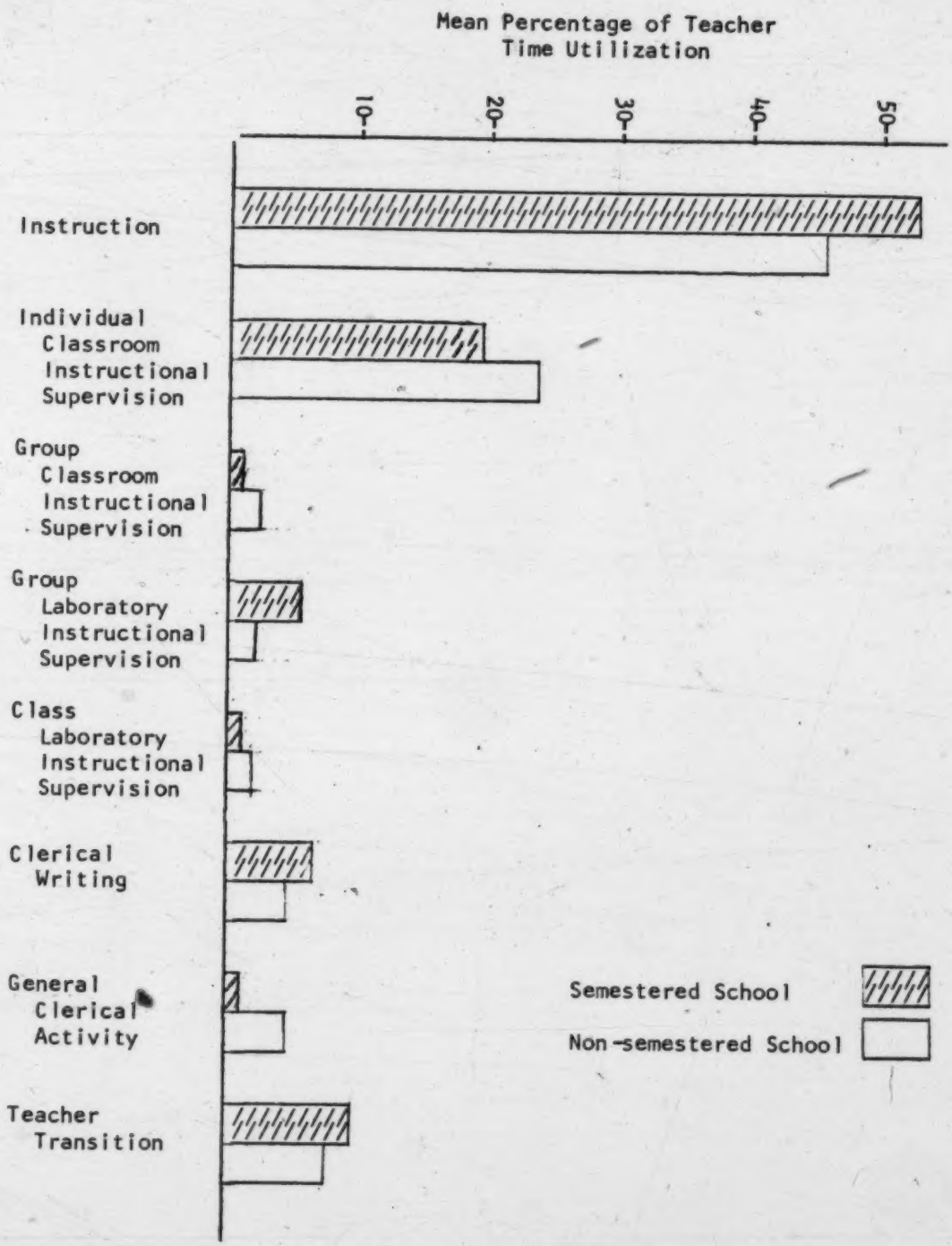

Figure 3

Comparison of Variables Between the Semestered and Non-semestered School

appeared high as compared to the 19 minutes in the non-semestered period a new perspective is achieved when one considers the average number of transitions implemented by the teachers. There were close to double the number of teacher transitions in the semestered period (mean of four) as compared to the non-semestered period (mean of 2.3). The 83 minute period was divided to a greater extent resulting in more ways teachers used their time.

The second greatest amount of teacher time used in both schools was found to be individual classroom instructional supervision. In the non-semestered period this mode of teacher time was used an average of 23.02 percent of the period time as compared to an average of 19.42 percent in the semestered period. Although the absolute difference was small (at 3.6 percent) the actual teacher time in the semestered period was an average of 16.1 minutes as compared to the non-semestered 9.2 minutes.

Since instruction and individual classroom instructional supervision comprised almost three-quarters of teacher class time they were the dominant modes which teachers interchanged and used, whatever the period length. The rest of the period was distributed to varying degrees among the other modes of teacher time utilization with teacher transition taking up an average of 8.47 percent of the time in the semestered period and an average of 7.59 percent of the time in the non-semestered period. Since an average of seven minutes of teacher transition time was used in the semestered period as compared to 2.9 minutes in the non-semestered period this reflected the nearly double mean number of teacher transitions (four) in the semestered period as compared to the non-semestered period (2.3). There were no great

differences found in the use of time in teacher transition between the two types of periods even though in actual time twice as much time was used in the semestered period.

Diminishing teacher time utilization after transition was noted with clerical writing in the semestered period (6.19 percent) taking up more time than in the non-semestered period (4.11 percent). General clerical activity was much higher in the non-semestered period (4.01 percent) than in the semestered period (0.77 percent) indicating that less duplicated matter was used in the longer period or the teachers took less time to hand them out.

Teacher use of the library itself was not observed. However, in non-semestered biology, students were working on projects by themselves which required the use of the library during class time. The teacher who supervised these students also instructed a small number of other students at the same time. The teacher usually stayed in the classroom to instruct the small number of students and was not observed to go to the library to supervise the students working on projects.

The use by teachers of laboratories was observed in both schools in biology, chemistry, and French. Group laboratory instructional supervision was noted to be used more extensively in the semestered period (4.88 percent) than in the non-semestered period (2.08 percent). Classroom laboratory instructional supervision was used much less in the semestered period (0.68 percent) than in the non-semestered period (1.82 percent). It is interesting to note that over twice as much group laboratory instructional supervision was used in the semestered period as compared to the non-semestered period, but over twice as much classroom laboratory instructional supervision was

used in the non-semestered period as compared to the semestered period. There was a lower utilization of time by the teachers in the semestered period of group classroom instructional supervision (0.62 percent) than in the non-semestered period (1.98 percent).

Audio-visual Material

Used in aiding instruction. This type of audio-visual material consisted of the overhead projector, film strip projector, tape recorder, and material categorized as "Other" which included the use of maps, diagrams, and laboratory demonstrative equipment. Figure 4 presents this information.

Mainly "Other" audio-visual materials were used in both schools. However, the semestered period had a greater utilization of these aids (3.83 percent) than the non-semestered period (2.35 percent). The overhead projector was also used to a greater extent in the semestered period (2.97 percent) than in the non-semestered period (1.67 percent). The film strip projector was observed not to be used in conjunction with instruction in the semestered period as opposed to the non-semestered period in which it was used 0.6 percent of instructional time. The tape recorder was used to a much greater extent in the non-semestered period (1.7 percent) as compared to the semestered period (0.38 percent).

Used as instruction. The audio-visual material used solely as a means of instruction is presented in Figure 5. The movie projector dominated the audio-visual usage in both schools, with the non-semestered period using this form of instruction to a greater extent (5.75 percent) than the semestered period (3.6 percent). The film

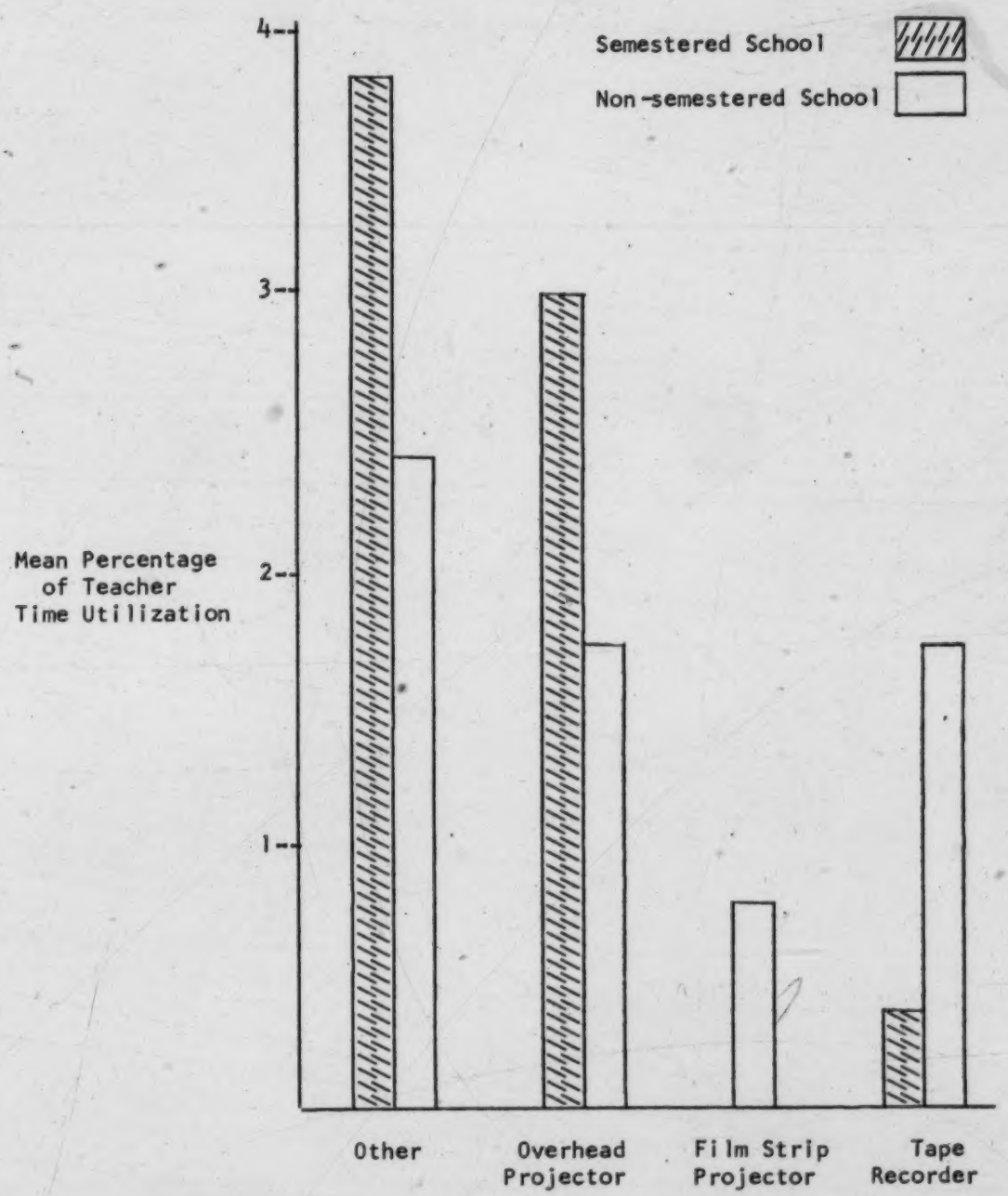

Figure 4

Audio-visual Material Used as a Help in Instruction

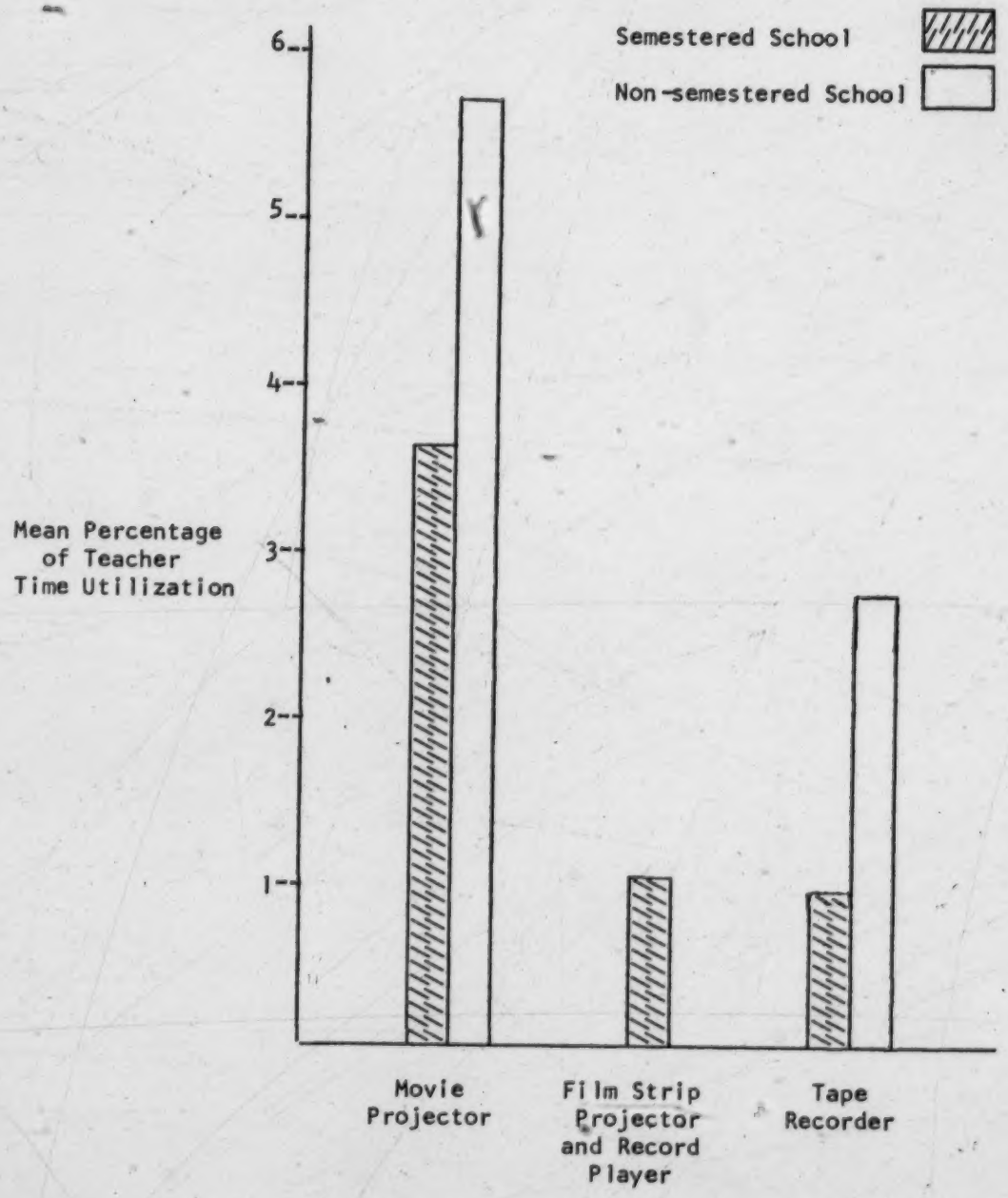

Figure 5

Audio-visual Material Used as a Means of Instruction

strip projector although usually used as an aid to instruction was used in one semestered social studies period with a record player as a means of instruction (1.12 percent of the time). The tape recorder, as observed only in French language laboratories, was used to a much greater extent in the non-semestered (2.88 percent) than in the semestered period (1.03 percent).

COMPARING TEACHER TIME UTILIZATION OF THE SEMESTERED AND NON-SEMESTERED SCHOOLS BY SUBJECT

A third purpose of this study was to find out if teacher time utilization between the same subjects was affected by period length. Two teachers from the semestered school and two teachers from the non-semestered school were compared on all the modes of time used in each subject. However, in biology only one teacher was observed in the semestered school.

English

Figure 6 compares the subject of English between both schools. Of all the subjects studied English had the third highest use of semestered instructional time (61 percent), and the lowest non-semestered instructional time (26.6 percent). Although in the non-semestered period instructional time was quite low, it was not compensated for by any greater use of any one of the other modes, but rather spread among these modes as shown in Figure 6. There was also a greater use of time in the non-semestered as compared to the semestered period in all other modes except instruction, and clerical writing which was 3.1 percent as compared to the semestered period of

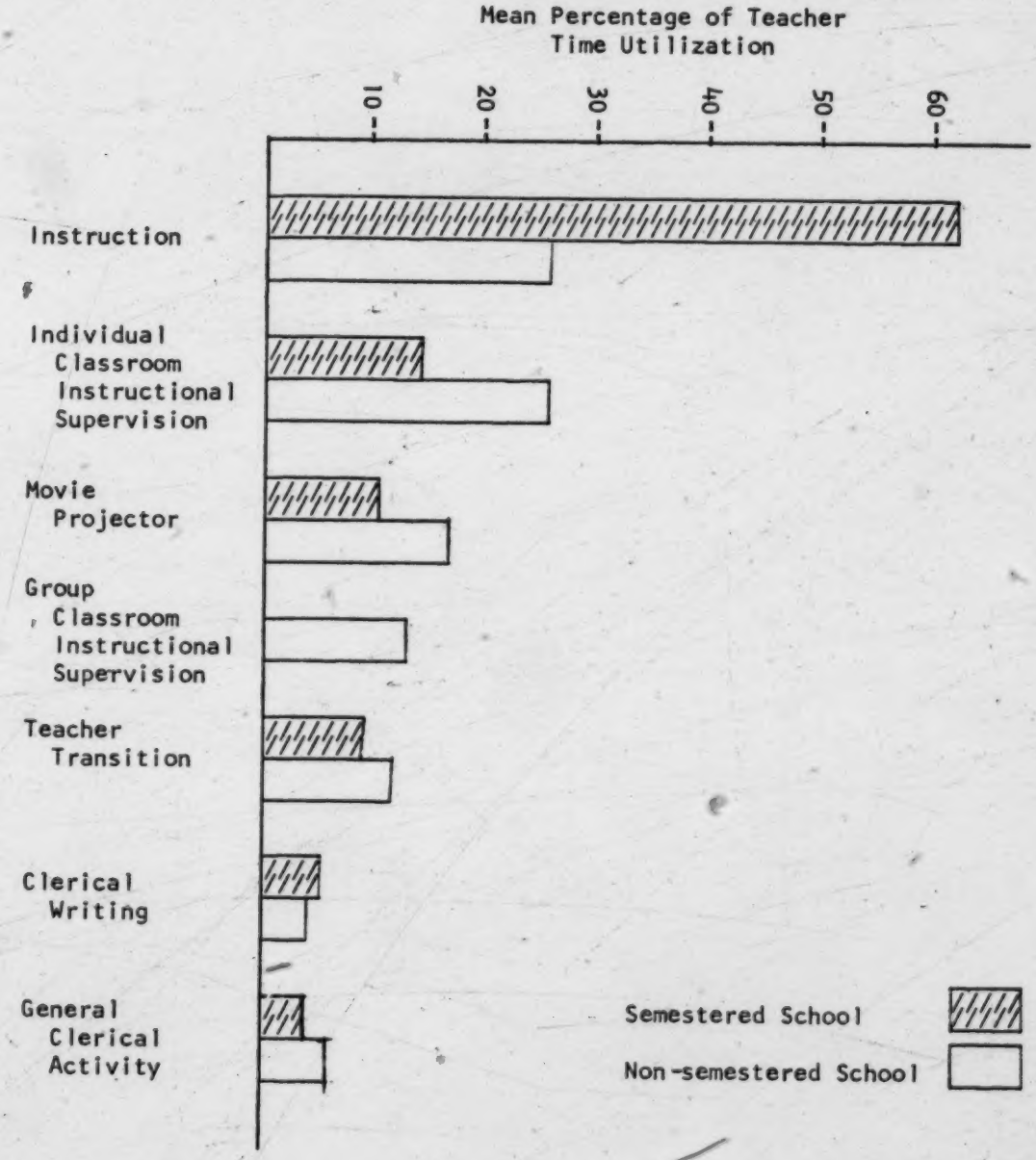

Figure 6

Comparing English Between the Semestered and Non-semestered School

3.5 percent. Individual classroom instructional supervision in the non-semestered period was much higher (25.78 percent) than in the semestered period (14.5 percent). Group classroom instructional supervision was only observed in the non-semestered period and then just once representing 11.9 percent time utilization. General clerical activity had a mean usage of 5.9 percent in the non-semestered period and 2.9 percent in the semestered period. The only audio-visual material used in English was the movie projector; again its use was much greater in the non-semestered (16 percent) as compared to the semestered period (9.2 percent).

Teacher transition was slightly higher in the non-semestered (9.4 percent) as compared to the semestered period (8.7 percent). The number of teacher transitions averaged 2.1 in the non-semestered period as compared to 5.1 in the semestered period. This may indicate that the greater instructional time of the semestered period did not hinder the teachers from using different modes of instruction and consequently mixing their modes.

Social Studies

Figure 7 compares social studies between the two schools. In this subject there were only slight differences in all the modes of teacher time utilization. Instructional time was found to be greater in the non-semestered (60 percent) as compared to the semestered period (51 percent). There was also a slightly greater use of individual classroom instructional supervision in the non-semestered (16.3 percent) as compared to the semestered period (14.1 percent). The use of general clerical activity was much larger in the non-semestered

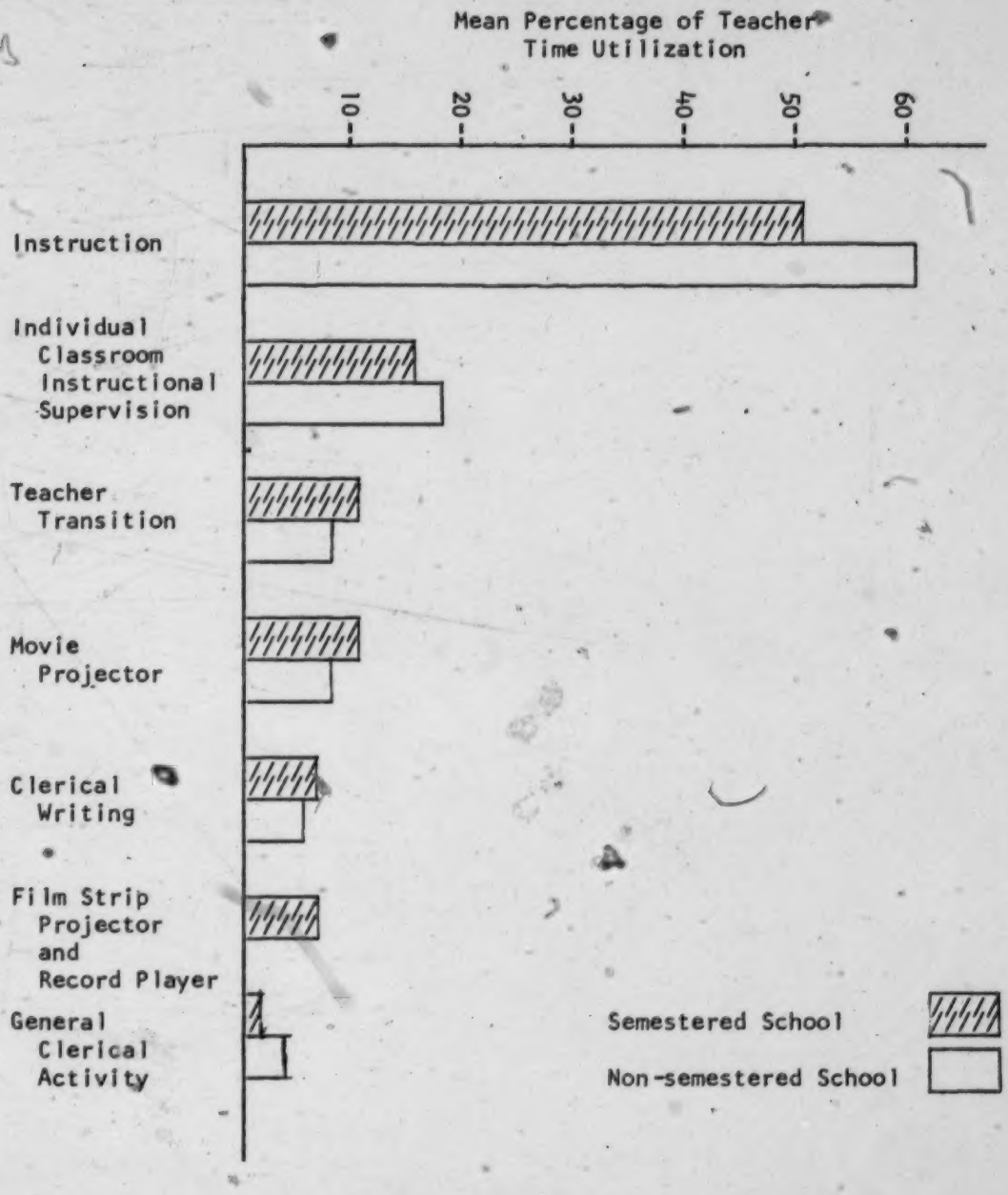

Figure 7

Comparing Social Studies Between the Semestered and Non-semestered School

period (3 percent) than the semestered period (0.8 percent). However, clerical writing was somewhat greater in the semestered (6.5 percent) as compared to the non-semestered period (4.7 percent).

The average teacher transition time was greater in the semestered period (10.6 percent) than in the non-semestered period (8.3 percent). The average number of teacher transitions was 3.7 in the semestered as opposed to two in the non-semestered period.

Three types of audio-visual materials were used in this subject. The movie projector was used in both schools with utilization in the semestered period somewhat greater (10.5 percent) than in the non-semestered period (7.8 percent). The combination of film strip projector and record player was used during one semestered period only (this produced a mean utilization of 6.2 percent). As an aid to instruction a map of Europe was used during one semestered period representing 7.5 percent of instructional time.

Mathematics

Figure 8 compares mathematics between the two schools. In the semestered period the largest percentage of time utilization was devoted to instruction (58.7 percent) as opposed to the non-semestered period where the largest percentage (54.8) was devoted to individual classroom instructional supervision. Instructional time usage in the non-semestered period was 36.5 percent while individual classroom instructional supervision in the semestered period was 29.8 percent. Instruction and individual classroom instructional supervision accounted for 90 percent of class time utilization.

In the semestered period teacher transition encompassed 8.5

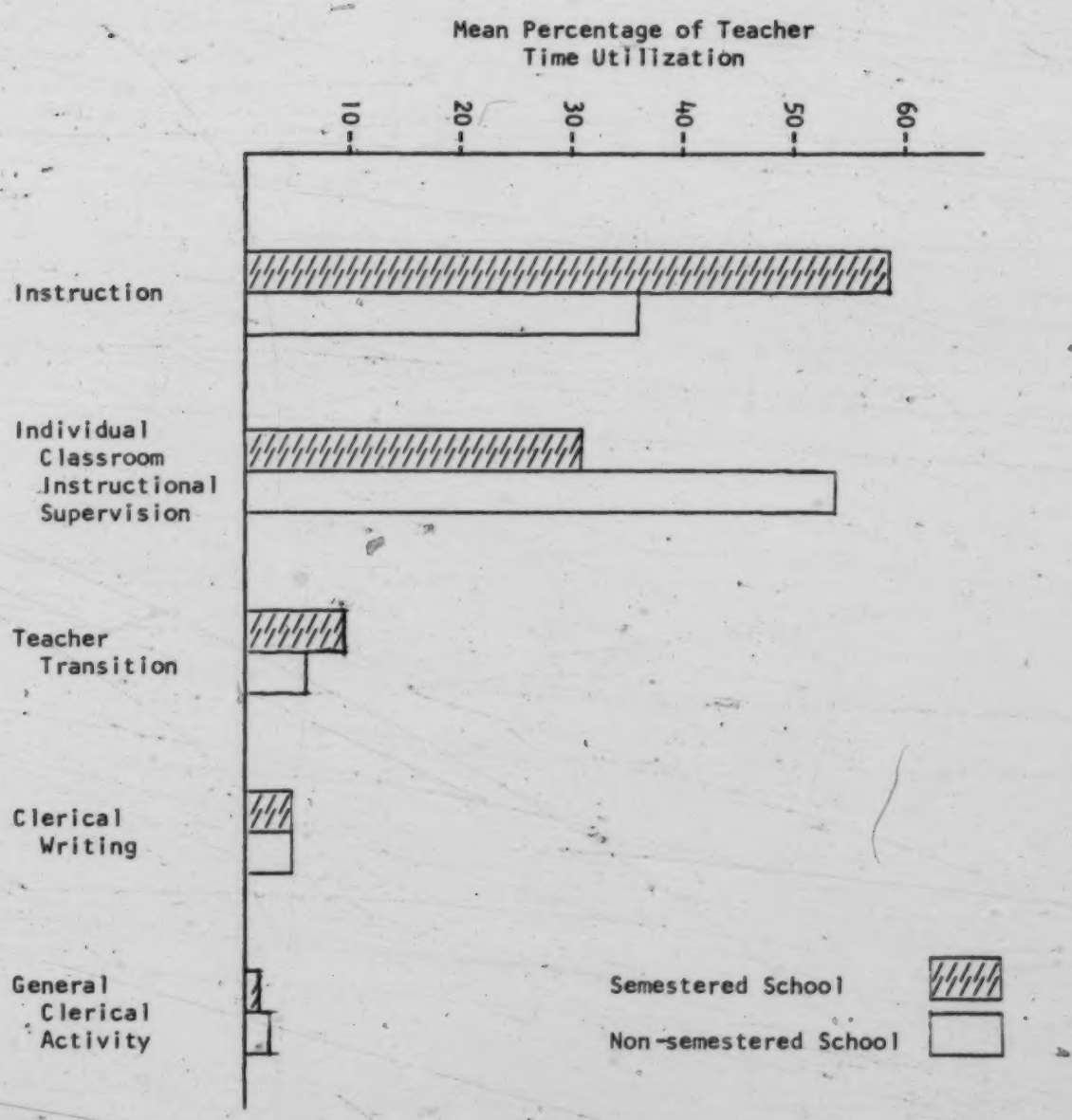

Figure 8

Comparing Mathematics Between the Semestered and Non-semestered School

percent of the period time utilization as compared to 5.2 percent in the non-semestered period. The average number of teacher transitions in the semestered period was almost double (3.8) as compared to the non-semestered period (2.1).

In both period types clerical writing was used 2.5 percent of class time. General clerical activity was observed to be used the least in both period types (0.9 percent in the non-semestered and 0.3 percent in the semestered period). The overhead projector was noted to be used only as an aid to instruction by one semestered teacher (6.5 percent).

Biology

Figure 9 compares biology between the two schools. The semestered results were obtained from only one teacher. The non-semestered results were obtained from two teachers who used a program in which most of the students were working on projects during class time, while the teacher instructed a small number (five or six) of students in a classroom setting. The teacher left the classroom at various times to supervise the students working on their projects in the laboratory.

Of all the subjects observed biology had the highest use of instructional time (63.7 percent) in the non-semestered period and the lowest use of instructional time (29.5 percent) in the semestered period. Comparing each school, group laboratory instructional supervision had the greatest time utilization in the semestered period (35 percent) and the least in the non-semestered period (2.2 percent). In the semestered period individual classroom instructional supervision

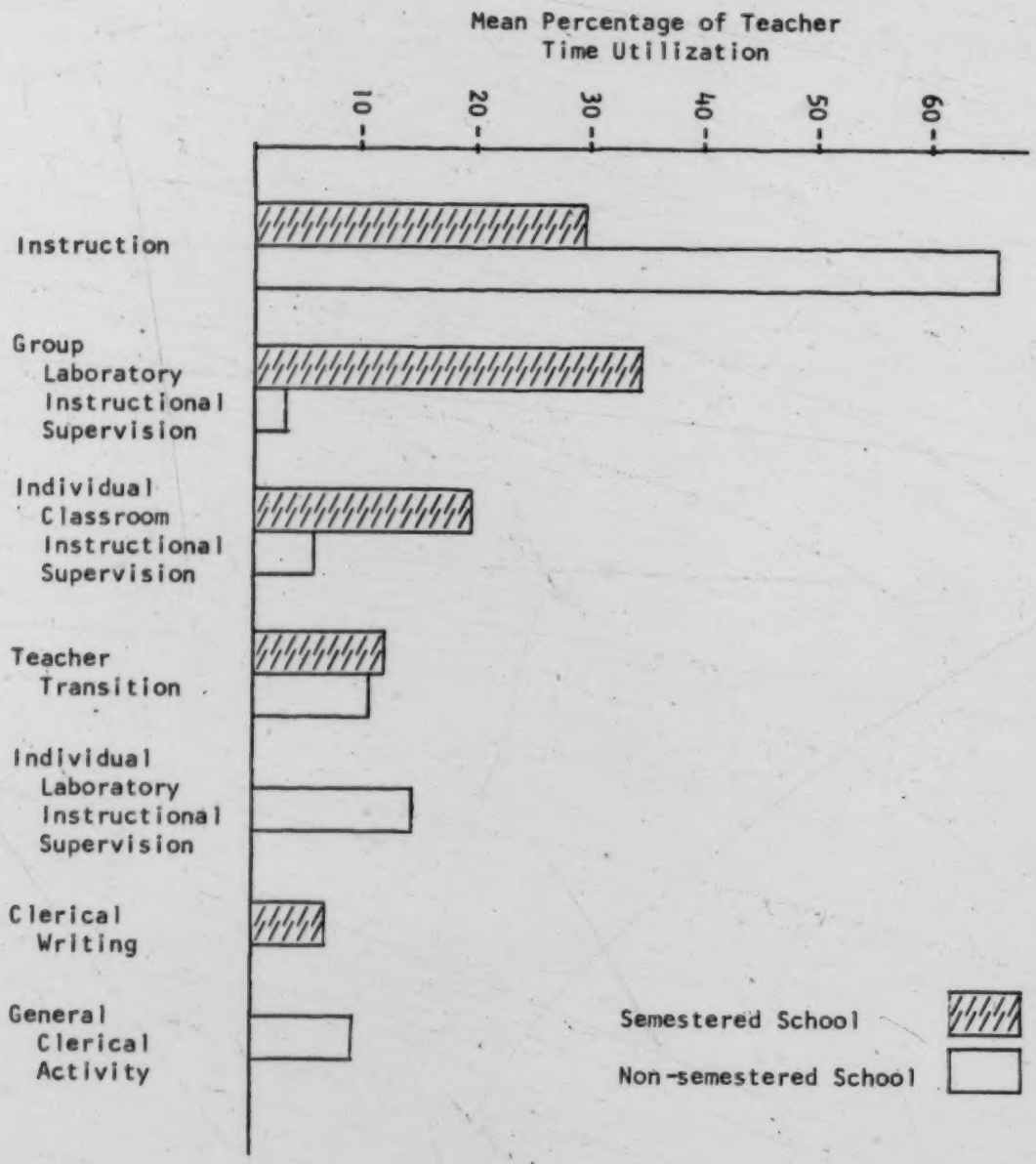

Figure 9

Comparing Biology Between the Semestered and Non-semestered School

was used 19.8 percent as compared to 4.7 percent in the non-semestered period. Individual laboratory instructional supervision (13.1 percent) and general clerical activity (7.2 percent) were only observed to be used in the non-semestered period. Clerical writing (5.7 percent) was only observed in the semestered period.

The average amount of time utilization in regards to teacher transition was almost the same in both periods (9.9 percent in the semestered period as compared to 9.0 percent in the non-semestered period). In contrast to this the average number of teacher transitions was almost double (3.7) in the semestered period as compared to the non-semestered period (2).

The film strip projector and certain charts and diagrams pertaining to non-semestered biology were used as an aid to instruction 3.1 percent and 14.1 percent respectively. The overhead projector was used as an aid to instruction in the semestered period only, with a mean of 1.1 percent.

Chemistry

Figure 10 compares chemistry between the two schools. Instructional time utilization was high in both schools (46.1 percent in the semestered period and 49.7 percent in the non-semestered period). Individual classroom instructional supervision had the second highest use in both schools with a mean of 20.6 percent in the semestered period and 23.1 percent in the non-semestered period. The time utilization of clerical writing was 10.6 percent, in the semestered as compared to 7.6 percent in the non-semestered period. Group laboratory instructional supervision was used to a similar degree in both schools (9.3

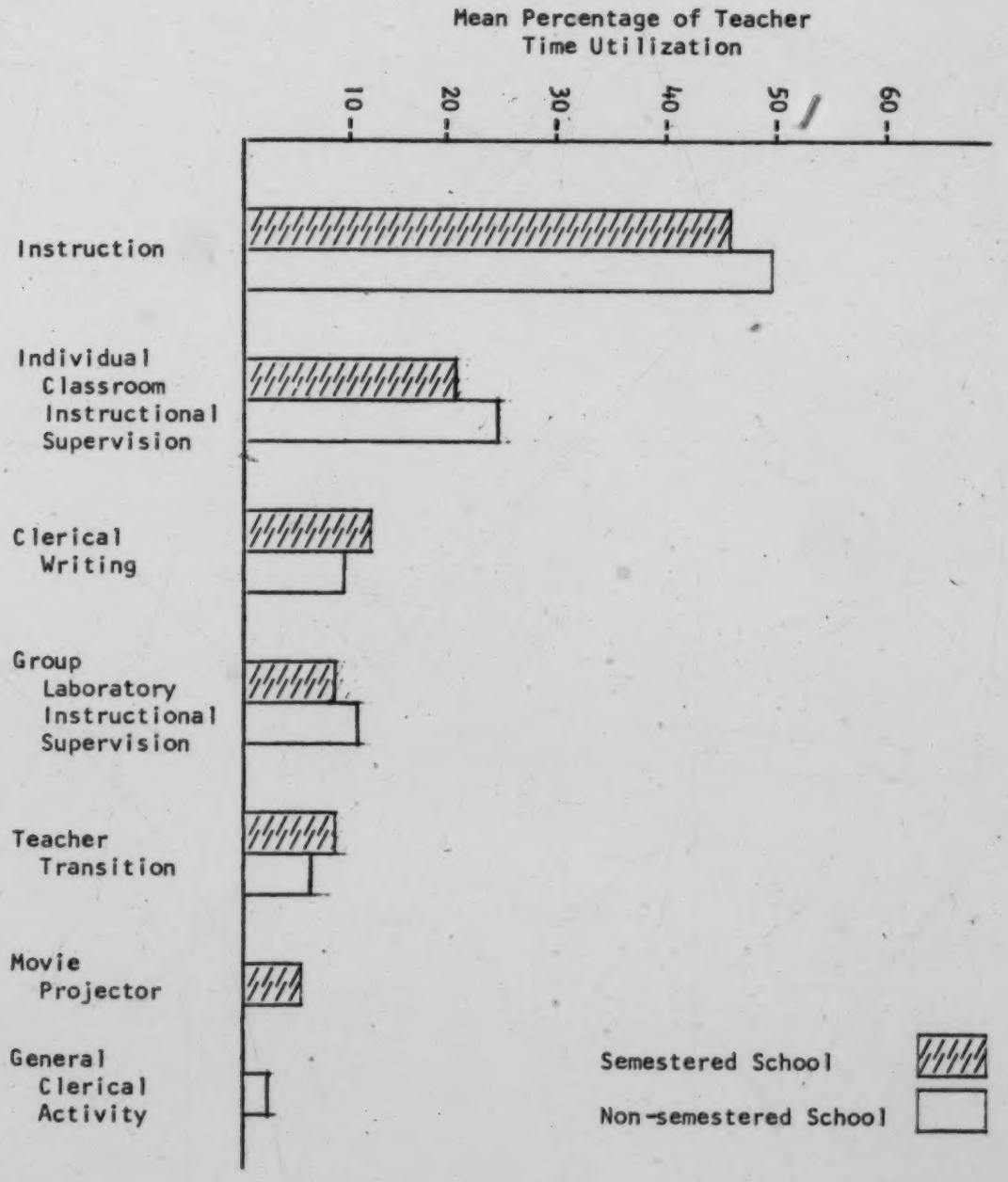

Figure 10

Comparing Chemistry Between the Semestered and Non-semestered School

percent in the semestered period and 10 percent in the non-semestered period). General clerical activity was used in the non-semestered period only (2.3 percent).

The amount of time used in teacher transition was higher in the semestered (9.2 percent) as compared to the non-semestered period (6.7 percent). The mean number of teacher transition was double in the semestered (4.1) as compared to the non-semestered period (2.1). One student transition was observed in each the semestered and non-semestered periods.

The movie projector was only used in the semestered period (4.3 percent). The use of audio-visual material was not observed in the non-semestered period. Various laboratory material such as beakers, chemicals, and test tubes were used as an aid to instruction in the semestered period only, utilizing 13.5 percent of the 46.1 percent instructional time.

French

Figure 11 compares French between the two schools. Semestered instructional time utilization was very high (61.2 percent) as compared to the non-semestered period (44.4 percent). The time utilization of individual classroom instructional supervision was somewhat higher in the semestered (17.9 percent) than the non-semestered period (13.4 percent). Classroom laboratory instructional supervision was much higher in the non-semestered (10.9 percent) as compared to the semestered period (3.7 percent). Group classroom instructional supervision was much higher in the non-semestered (10.9 percent) as compared to the semestered period (3.7 percent). Group classroom

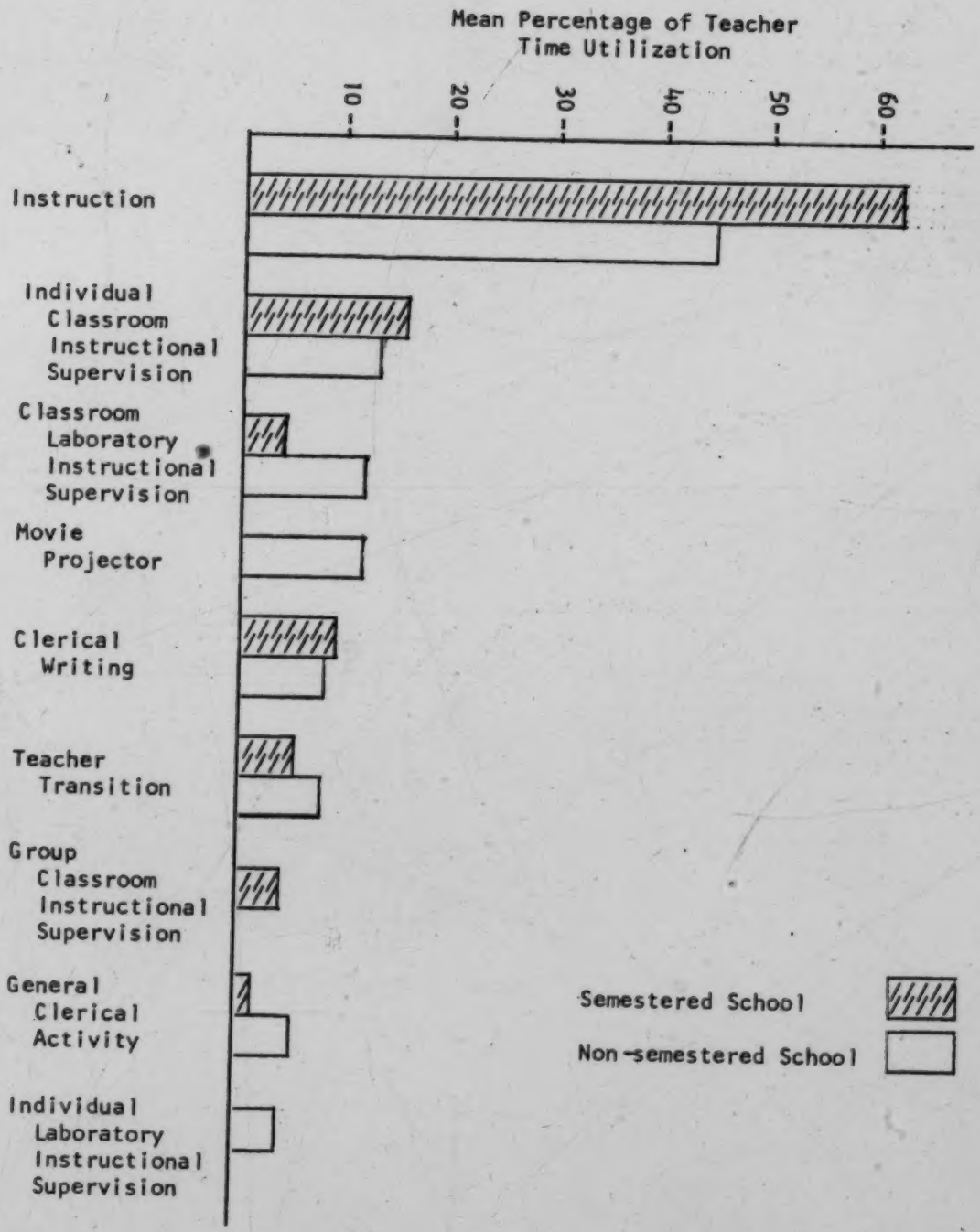

Figure 11

Comparing French Between the Semestered and Non-semestered School

instructional supervision was only used in the semestered period (3.3 percent) while individual laboratory instructional supervision was only used in the non-semestered period (2.3 percent). Clerical writing was found to be higher in the semestered (8.2 percent) as compared to the non-semestered period (6.7 percent). General clerical activity on the other hand was found to be much higher in the non-semestered period (4.7 percent) than the semestered period (0.2 percent).

The use of teacher transition was higher in the non-semestered period (6.9 percent) than the semestered period (4.5 percent). In contrast to this the mean number of teacher transitions were similar in both types of periods (3.7 in the semestered period and 3.4 in the non-semestered period). Two student transitions were observed in the semestered period.

French used a great variety of audio-visual material in both school types. The movie projector was only used in the non-semestered period (10.6 percent). As an aid to instruction the overhead projector was used in both the semestered and non-semestered period at a mean rate of 4.6 percent and 10 percent respectively. The tape recorder was used 27.5 percent of the time in the non-semestered as compared to 3.7 percent in the semestered period.

TEACHER PERCEPTIONS OF SPECIFIC AREAS OF TIME UTILIZATION

The final purpose of this study was to examine the perceptions of the sample of teachers in regards to the use of field trips, the library, guest speakers, and audio-visual material. This was also

compared to the author's observations in these areas of time utilization.

Guest Speakers

The first question on the teacher questionnaire was: "Did you use guest speakers during the last five months? If so how many times?" In the semestered school two teachers responded affirmatively to this question, one in social studies and one in English. Both teachers reported that they used guest speakers three times. In the non-semestered school only one teacher responded affirmatively to this question. This was in chemistry and the teacher reported using the guest speaker only once. The author did not observe the use of guest speakers at any time during this study.

Field Trips

The second question on the teacher questionnaire was: "Did you take the class on field trips during the last five months? If so how many times?" In the semestered school none of the teachers reported taking their class on field trips. In the non-semestered school only the two teachers in English reported having taken their classes on one field trip. The author observed no utilization of field trips by any of the teachers.

The Library

The third question on the teacher questionnaire was: "Did you use the library during the last five months? If so how many times for group work and individual work?" In the semestered school seven of the eleven teachers responded affirmatively to this question. Of the

seven teachers who responded affirmatively, six used the library for group work ranging from once to over twenty times. All seven teachers responded to having used the library for individual work ranging from two to over fifty times. Teachers in biology, chemistry, English, and social studies indicated they had used the library. The author observed no utilization of the library during a class period in the semestered school.

In the non-semestered school nine of the twelve teachers responded affirmatively to this question. Teachers of English, chemistry, biology, social studies and French indicated they used the library. Of these nine teachers, eight responded to having used the library for group work ranging from once to over twenty times. Six teachers indicated that they used the library for individual work ranging from very few times to daily. The daily use of the library was in biology. It was also in biology that the author observed some students using the library individually without teacher supervision. The author did not observe teacher usage of the library in any of the other subjects.

Audio-visual Equipment

The fourth question on the teacher questionnaire was: "Which audio-visual equipment do you tend to use the most?" Only two teachers in the semestered school reported not using any audio-visual equipment. One was in English and the other in mathematics. Of the nine teachers who mentioned the use of audio-visual material, six mentioned the use of the overhead projector, five the movie projector, three the tape recorder, three the film strip projector, two chemistry equipment for

class demonstrative purposes, one the record player, one the film loop projector, and finally one teacher mentioned the use of the combination of film strip projector and record player. The author observed that three teachers used the movie projector, three the overhead projector, two laboratory material for demonstrative purposes, one the tape recorder and one used the film-strip--record-player combination. This audio-visual equipment was observed to be used in all the subject areas and two teachers were observed not to use any. These two teachers were from English and mathematics.

In the non-semestered school all teachers reported using audio-visual material. Of the twelve teachers reported using audio-visual equipment, seven reported using the film strip projector, five the movie projector, five the tape recorder, three the overhead projector, two the record player, one the slide projector, and one reported using the film loop projector. The author observed that four teachers used the movie projector, two the tape recorder, one the overhead projector, and one teacher used the film strip projector in conjunction with some diagrams.

SUMMARY

Teachers utilize their time in the classroom in a variety of ways. In the order of highest to lowest, teachers utilized their time in this way: instruction, individual classroom instructional supervision, teacher transition, clerical writing, the movie projector, group laboratory instructional supervision, general clerical activity, group classroom instructional supervision, individual laboratory instructional supervision, classroom laboratory instructional super-

vision, the tape recorder, and the combination of film strip projector and tape recorder. Instruction on the average encompassed fifty percent of class time. Such "0ther" audio-visual materials as maps, charts, diagrams, and laboratory equipment for demonstrative purposes were used the greatest amount as an aid to instruction. Audio-visual equipment as an aid to instruction in order of highest to lowest was as follows: "0ther", overhead projector, tape recorder, and film strip projector.

In comparing teacher time utilization between the semestered and non-semestered school small differences were found in any of the variables studied. Teacher time utilization was very similar between the schools. From highest to lowest the teacher use of time in each of the schools was: instruction, individual classroom instructional supervision, teacher transition, clerical writing, group laboratory instructional supervision, general clerical activity, group classroom instructional supervision, and class laboratory instructional supervision. Instruction in both schools took up close to fifty percent of teacher class time. The audio-visual material used as instruction from highest to lowest were: the movie projector, tape recorder, and the combination of film strip projector and record player. The audio-visual material used as an aid to instruction from highest to lowest utilization were: "0ther", overhead projector, tape recorder, and film strip projector.

When comparing individual subjects in the various categories of teacher time utilization there seems to be a greater individual variability. English, mathematics, and biology showed large differences between the semestered and non-semestered period in instruction and

individual classroom instructional supervision. English and mathematics had a much greater amount of instruction in the semestered period and a comparatively increased amount of individual classroom instructional supervision in the non-semestered period. In biology the non-semestered period had a much greater degree of instruction while the semestered period showed a greater utilization of individual classroom instructional supervision. Biology also showed a large difference in favor of the semestered period in group laboratory instructional supervision. French showed a large difference in favor of the non-semestered period in classroom laboratory instructional supervision and general clercial activity.

Some modes of time utilization were used in one subject in one school but not in the same subject in the other school. Examples of this may be found in all subjects except mathematics. In English group classroom instructional supervision was only observed in the non-semestered period. In social studies, the combination of film strip projector and record player was only observed in the semestered period. In biology individual laboratory instructional supervision and general clerical activity were only observed in the non-semestered period, while clerical writing was only observed in the semestered period. In chemistry, the movie projector was only observed to be used in the semestered period while general clerical activity was only observed in the non-semestered period. In French, the movie projector and individual laboratory instructional supervision was only observed to be used in the non-semestered period while group classroom instructional supervision was only used in the semestered period.

In analyzing certain perceptions of teacher time utilization,

it was found that two teachers in the semestered school and one teacher in the non-semestered school used guest speakers, field trips were only used in the non-semestered school by two teachers, and the library was used in the semestered school by seven teachers and the non-semestered school by nine teachers. The author observed no utilization of guest speakers and field trips but did observe that students used the library in the non-semestered school during class time.

Audio-visual equipment was used in both schools. More teachers reported the utilization of audio-visual material than was observed by the author. However, some of the reported use of time concurred with the author's observations. For instance, two semestered teachers reported the use of demonstrative laboratory equipment and one teacher reported the use of the film-strip-projector--record-player combination. The author in these cases observed exactly what the teachers reported on the questionnaires.

Chapter 5

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

SUMMARY OF THE STUDY

This study was designed to examine teacher class time utilization in six grade twelve subject areas; English, social studies, mathematics, biology, chemistry, and French. A comparison was attempted between two high schools in a large urban school system, one having these subjects in eighty-three minute periods (semestered) while the other having these subjects in forty minute periods (non-semestered).

This study attempted to find answers to the following questions: How do teachers utilize their time during the class period? How does the teaching process differ between the forty minute and the eighty minute period? How does the teaching process differ between the shorter and longer period in each of six different grade twelve subject areas? Does the use of guest speakers, field trips, the library and audio-visual equipment differ between the shorter and longer period?

The procedure for gathering information consisted of three parts. Part A consisted of general teacher activities which included instruction, instructional supervision--in the classroom, laboratory, library--clerical writing, general clerical activity, teacher transition, and student transition. Part B involved recording the

teacher operating, transporting, and manipulating various audio-visual equipment and materials such as the movie projector, television set, tape recorder, film strip projector, record player, overhead projector, maps, models, and other equipment used for demonstrative purposes. Part C involved recording the use of such teaching aids as guest speakers, field trips, and other observations.

A personal questionnaire was handed to the teachers involved in the study before the actual observations were made. The purpose of the questionnaire was twofold; one, how the sample of twenty-three teachers compared to the larger urban high school teacher population in age, sex, amount of professional teacher training, and length of teaching experience, and two, what the teacher's perceptions were on their use of guest speakers, field trips, the library and audio-visual equipment.

The procedure used to analyze the data involved the recording of actual teacher time utilized during a forty and an eighty-three minute period, changing these times into percentage of the period time, and then averaging the various percentages in the categories of time utilization and comparing the averages of the semestered and non-semestered period. The data were analyzed in descriptive terms and recorded in bar graph form for easy interpretation.

The analysis of the data revealed the following:

1. Instruction and individual classroom instructional supervision account for about 71 percent of class time utilization. The other 29 percent was distributed in decreasing order among teacher transition, clerical writing, the movie projector, group laboratory instructional supervision, general clerical activity, group classroom instructional supervision, individual laboratory instructional super-

vision, classroom laboratory instructional supervision, the tape recorder, and the record player.

2. The audio-visual materials used in conjunction with instruction in decreasing order were "Other", overhead projector, tape recorder, and film strip projector. "Other" and overhead projector were used to a greater extent in the semestered period while the tape recorder and film strip projector were used to a greater extent in the non-semestered period.

3. The audio-visual material used solely as a means of instruction were the movie projector, tape recorder, and the combination of film strip projector and record player. The movie projector and tape recorder had a greater use in the non-semestered period while the combination of film strip projector and record player was only used in the semestered period.

4. When comparing the two schools as a whole, only small differences were found in teacher use of time. There was slightly more use of instruction, teacher transition, clerical writing, and group laboratory instructional supervision in the semestered period while individual classroom instructional supervision, general clerical activity, group classroom instructional supervision, and class laboratory instructional supervision were used slightly more in the non-semestered period.

5. In English, instruction was used to a much greater extent in the semestered period while individual classroom instructional supervision, the movie projector, and group classroom instructional supervision were used to a greater extent in the non-semestered period.

6. In social studies, relatively little differences were found

with a slightly greater use in the non-semestered period of instruction and individual classroom instructional supervision.

7. In mathematics, instruction was used to a greater extent in the semestered period while individual classroom instructional supervision was used much more in the non-semestered period.

8. In biology, instruction, individual laboratory instructional supervision, and general clerical activity were used to a much greater extent in the non-semestered period while group laboratory instructional supervision, individual classroom instructional supervision and clerical writing were used to a much greater extent in the semestered period.

9. In chemistry, instruction and individual classroom instructional supervision were used slightly more in the non-semestered period. The movie projector was used to a much greater extent in the semestered period while general clerical activity was used to a much greater extent in the non-semestered period.

10. In French, instruction and individual classroom instructional supervision were used slightly more in the semestered period while classroom laboratory instructional supervision and general clerical activity were used more in the non-semestered period. The movie projector and individual laboratory instructional supervision were used to a much greater extent in the non-semestered period while group classroom instructional supervision was used more in the semestered period.

11. Although some teachers indicated on the teacher questionnaire that they used guest speakers, field trips, and the library, the author observed that only some students used the library during a non-semestered biology period. Guest speakers and field trips were not

observed during this study.

12. The audio-visual equipment as reported by the teachers on the questionnaire related fairly closely to the author's observations.

CONCLUSIONS

Since the sample was small, individual differences have had a sizeable effect on the results. However, some patterns can be ascertained as being consistent throughout the study. The following conclusions were drawn from the study.

1. The amount of time the teacher used in instruction varied little between a semestered and non-semestered period. An average of about half the period was used for instruction, or about 19 minutes in the non-semestered period and 44 minutes in the semestered period.

2. The amount of time the teacher used in individual classroom instructional supervision varied little between the semestered and non-semestered period. An average of one fifth of the class time was used for individual classroom instructional supervision, or about nine minutes in the non-semestered period and sixteen minutes in the semestered period.

3. The amount of time the teacher used in transition varied little between the semestered and non-semestered period. On the average only about three minutes were used in the non-semestered period and seven minutes in the semestered period. With the average number of transitions, little differences between the semestered and non-semestered periods were also found. Generally, the number of times a teacher changed a class activity in the semestered period was twice as much as in the non-semestered period. At least one third of teacher

transitions in the semestered period were the result of the three minute break half way through the period. Since the number of teacher transitions and the amount of time the teachers used in transition were very similar in both period types, this may indicate that basic time utilization does not change with length of period. That is, the second forty minutes in the semestered period was used very similarly to the first.

4. The amount of time the teacher used in clerical writing varies slightly between the semestered and non-semestered period. On the average the teacher used a few minutes more in writing information on the blackboard or copying material on paper in the semestered than the non-semestered period.

5. The amount of time the teacher used in general clerical activity was greater in the non-semestered than the semestered period. The amount of duplicated matter produced and handed out was approximately four times as much in the non-semestered as compared to the semestered period.

6. Teacher time utilization of the movie projector was slightly greater in the semestered as compared to the non-semestered period. The longer period may well be more suited to films especially feature movies. Instead of presenting the feature movie in parts as would have to be done in the non-semestered period the whole movie could be shown during the semestered period.

7. The amount of time the teacher used "Other" audio-visual material and the overhead projector differed between the semestered and non-semestered periods. These aids in teaching were used slightly more in the semestered period. This may be due to individual preferences

in the semestered school for using the overhead projector and demonstrative material as in chemistry. It may also indicate that the longer period in regards to instruction requires the use of more audio-visual aids. These aids may have been used as a motivational mechanism to buffer lagging interest in the longer period.

8. When comparing the two schools in all factors little difference was found in teacher time utilization between a semestered and a non-semestered period. Therefore, one can conclude that teachers used their time in the classroom very similarly in a forty or eighty-three minute period. The second half of the semestered period was used very much in the same manner as the first half.

9. The amount of time the teacher used in instruction and individual classroom instructional supervision varies to some extent between the semestered and non-semestered period in English, mathematics and biology. In biology this difference was due to the manner in which the course was handled differently in the non-semestered period, and only one teacher was observed in the semestered school. However, in both English and mathematics instruction was used to a much greater extent in the semestered school. This may indicate that the material has to be covered much faster in the semester and direct instruction by the teacher involving the class as a whole may accomplish this.

10. Teachers generally favor the transition from instruction to individual classroom instructional supervision and vice versa. In some cases audio-visual aids were used. Twice as many transitions were accomplished in the semestered as compared to the non-semestered period. According to Davis (1966: 109), ". . . the greater the variety of sensory avenues brought to bear on a subject or problem the more thorough will

be the learning and the higher will be the retention." This study has shown that teachers try to use a number of "sensory avenues" such as listening, watching-listening (especially with instructional aids such as the overhead projector, movie projector, and film strip projector) and reading during the class period. In the semestered period these "sensory avenues" were changed twice as much as in the non-semestered period indicating that these teachers generally tend to use more ways of presenting information to keep the interest of the student during the longer period.

11. Fehlberg (1968) found no difference in achievement of students between the semester and non-semester system in English 30 and Mathematics 30 but did find some difference in Social Studies 30 favoring the semester system. In this study English 30 in the non-semestered period seemed to involve more "sensory modalities" and spread them over an equal time base. The teachers in semestered English 30 used more lecture-class discussion for almost two-thirds of the period time. This lack of using more "sense modalities" in the semestered period could be a cause in hindering the achievement of students.

In Mathematics 30 a similar time use as in English 30 was found but here very little audio-visual aids were used. The lecture-class discussion method was used close to two-thirds of the semestered period. The use of too much instruction in the semestered period could have the effect of hindering the achievement of students. However, in semestered Social Studies 30 less time was spent in the lecture type instruction and a greater number of "sense modalities" such as the film projector, film strip projector, and record player were used. This could favor the student's achievement in Social Studies 30 in the

semestered period. However, such an analogy between achievement by students and teacher use of time in the classroom is highly tenuous because the achievement of the students in this study was not measured and compared.

12. According to Wynn (1971:145-150) students in a semester system tend to receive more individual attention, teachers tend to be more flexible in their approach to their lessons, instruction under the semester system is more intensive and more audio-visual equipment is required. This study found that students tend to receive about the same amount of individual attention (Individual Classroom Instructional Supervision) in the semestered and non-semestered period. However, in some subjects such as English and mathematics individual attention was greater in the non-semestered period. This study found little indication that the semestered period influenced teachers to be more flexible in their approach to their lessons. Teachers generally repeated their style and ways of teaching during the second half of a semestered period as was used during the first half of the period. This study also found small variations in the intensity of instruction between the semestered and non-semestered period. Teachers in both situations used about half of the period for instruction. However, instruction was much more intense in semestered English and mathematics. There was also more use of audio-visual equipment in the semestered period.

Although Wynn (1971:153) mentions that "Field trips, guest speakers, laboratory experiments, and student projects can all be better accommodated by the longer period," this study found that the use of the above categories did not increase in the semestered school

and field trips were only used in the non-semestered school.

IMPLICATIONS

A number of general implications can be drawn from the study.

1. The major implication of the study is that since teachers seem to use the time in the classroom very much the same in the eighty-three minute period as in the forty minute period, then what value does the longer period have in the improvement of instruction and achievement for the students? Although in some semestered subjects there was more use of audio-visual equipment and a greater intensity of instruction, does this produce a better learning environment and present greater achievement to the students? The value of the semester system may actually be more in the flexibility of timetabling, less courses for the student to take during a day, and the course being completed in five months.

The basic questions are these: Does the curriculum have to cover a specific amount of material? If so, must all the material be covered in the classroom over a specific period of time? Would not a shorter period of daily class time instruction with less information be remembered more readily, and thus be more valuable? The implication is that teachers have to fit a fairly rigid curriculum into an eighty minute period and at the same time try to keep students interested. The basic idea is flexible time utilization.

2. A second implication of the study is the need for administrators who also act as evaluators to understand how and why teachers use their class time the way they do. For instance, should teachers

vary their time utilization to a greater extent when the period length is increased? Or should instruction time be fifty percent on the average for all teachers and all subjects? There are many implications for standardizing evaluation procedures for administrators.

3. Finally, the study could have value for teacher education, especially the management of instruction. How should teachers utilize their time in the classroom? At what point during the period should lecture, individual help, the overhead projector or movie projector be used? How much time should be spent on lecture or a film strip? How could one use an eighty minute period differently from a forty minute period? The implication is that teacher education should include a way to practically and effectively present prospective teachers with a way to learn to apply various sensory avenues to get ideas and information across to students.

SUGGESTIONS FOR FURTHER RESEARCH

1. A similar but in depth study could be done using the same department in each of the semestered and non-semestered schools and observing them every day over several months.

2. A study could be done on how students use their time both in the classroom and outside. Such observations could then be related to their achievement. This could be accomplished through questionnaires and direct observation.

3. Student achievement could be investigated and measured in the semester and non-semester system in both academic and non-academic subjects. A study could be designed to see how achievement may be related to the longer period or other factors.

4. Since large differences in time utilization by teachers between the semestered and non-semestered period were found in some subjects and not in others these subjects could be investigated further to see if these differences hold up when using other populations.

5. Different grade levels could be investigated to see whether the time utilization at the various grade levels remains consistent over all the grades taught. A number of different departments could be studied or one department could be studied in depth.

6. Attitudes of teachers and students towards a longer or shorter period could be investigated. This might reveal if some subjects are more suited to a shorter or longer period. It would be interesting to find out the reason why a subject might be better suited to a different period length.

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APPENDIXES

APPENDIX A

Instrument

Instrument (Part A)

Teacher: _____ School: _____

Date: April 6, 1973 Period: 7-8/1:54-3:17 Subject: Social Studies 30

Part A: Teacher Activities (general)	Total Time	Comments
1. Instruction (actual times) 2:20-2:34, 2:56-2:58	16	
2. Control (✓) indicates reaction		
Each check mark (✓) indicates the activity for one minute.		Actual times were used.
3. Instructional Supervision:		
a. Classroom		
(1) individual: 2:58-3:17	19	
(2) group:		
b. Laboratory		
(1) individual:		
(2) group:		
(3) class:		
c. Library		
(1) individual:		
(2) group:		
4. Clerical Writing:		
5. General Clerical Activity:		
(1) Student Duplicated Matter:		
(2) General Comments:		
Each check mark (✓) indicates the activity change for 0.5 minute.		Actual times were used.
6. Teacher Transition: 1:54-1:58, 1:58-2:01	7	At beginning of class. Number of Transitions-5
7. Pupil Transition:		

Teacher Transitions (5)	8.4%
Individual Classroom Instructional Supervision	22.9%
Instruction	19.3%
Film Strip Projector and Record Player	49.4%

Instrument (Part B)

Part B: Materials Manipulation (specific)

1. Actual Time Spent	Total Time	Comments
a. Overhead Projector:		
b. Movie Projector:		
c. Film Strip Projector:		
2:01-2:20, 2:34-2:56	41	Record Player with Film Strip Projector. WWI
d. Television Set:		
e. Tape Recorder:		
f. Record Player:		
2:01-2:20, 2:34-2:56	41	
g. Other (specify):		

Instrument (Part C)

Part C: Other ways of time utilization

1. Guest Speaker (comments):

2. Field Trips (comments):

3. Other Comments and Observations:

APPENDIX B

Definition of Terms
Used in Instrument

Definitions of Terms Used in Instrument

Part A

1. Instruction: The actual time spent by the teacher in involving the whole class in instruction in the classroom.

2. Control: The teacher is directing attention to the pupils' conduct.

3. Instructional Supervision: The teacher is giving individual attention to the students or groups of students when they are working on individual or group projects.

a. Classroom

(1) individual work

- homework

- research project (term paper)

(2) discussion groups

- groups which are working on a project

b. Laboratory

(1) individual work

(2) group work

(3) involving the whole class in instruction

c. Library

(1) individual work

(2) group work

4. Clerical Writing: The teacher is copying material on paper, on a stencil, or on the chalkboard at other times than during actual instruction.

5. General Clerical Activity: The teacher is operating a duplicating machine, assembling and stapling duplicating matter, hands out duplicated matter to students, and assorts marks for students.

a. Student Duplicated Matter: Actual time spent by students working in class on the duplicated matter.

b. General comments on how much duplicated matter in the form of exercizes, tests, etc., was handed out.

6. Teacher Transition: The teacher is changing an activity during the class period.

7. Pupil Transition: The pupils as a group are changing an activity during the class period.

Part B

1. Materials Manipulation: The teacher is transporting, setting up and/or operating projectors, tape recorders, television sets, overhead projectors, record players, or other mechanical devices for instructional purposes.

Part C

1. Other ways of time utilization.

APPENDIX C

Teacher Questionnaire

TEACHER QUESTIONNAIRE

Age: _____ Sex: _____

Marital Status: _____

Years of University and Professional Education: _____

Major Field of Specialization: _____

Years of Teaching Experience (including present): _____

Teaching Assignment:

SEMESTERED SCHOOL (please check): _____

NON-SEMESTERED SCHOOL (please check): _____

In the subject area which will be observed:

1. Did you use guest speakers during the last five months? _____

   If so how many times? _____

2. Did you take the class on field trips during the last five months? _____ If so how many times? _____

3. Did you use the library during the last five months? _____

   If so how many times:

   FOR group work: _____

   FOR individual work: _____

4. Which audio-visual equipment do you tend to use the most?

   _____

APPENDIX D

Letter to Principals

December 5, 1972
Department of Educational
Administration
The University of Alberta

Mr. ----------
Principal
----------High School
----------, Alberta

Dear Mr.----------

This is a brief outline describing the purpose of my research project and activity proposed in ---------- High School.

Purpose:

The objective of this research project is to establish whether there are differences in the utilization of time and facilities in a semestered and a non-semestered high school period with regard to six different grade 12 academic subject areas: English, social studies, mathematics, biology, chemistry and French. The project involves a 5-5 semestered high school and a non-semestered high school.

Activity:

My involvement in regards to this project will be to enter the classroom at the beginning of the period and leave at the end of the period. Two teachers will be observed at least one full class period each month over a three month period in each subject area. The observations as actual time will be recorded on a data sheet. All teachers will stay strictly anonymous in the study.

I would like to have a talk with each of the teachers in regards to the purpose of my project and at the same time ask each a number of questions involving the use of outside resources and other facilities. A brief questionnaire will be given to each teacher the purpose of which is to see if there is a consistency between this sample and the personal variables of teachers in Alberta. The questionnaire would involve age, sex, marital status, field specialization, years of teaching experience, years of university and professional education, and teaching assignment (semestered or non-semestered). This information will be handled in strictest confidence and will only be mentioned in generalized terms in the thesis.

I would be in need of a timetable for each of the 12 teachers so that I can plan a schedule for the visitations. Again I must stress that I am only marking down time during my observations and that all information will be held in strictest confidence.

Thanking you.

Yours truly,

Kurt Mueller

APPENDIX E

Detailed Results of Observations by Subject and School Type

Meanings of the various lettered categories which are included in the detailed results of the observations:

1. Materials Manipulation
   a. Overhead Projector
   b. Movie Projector
   c. Film Strip Projector
   d. Television Set
   e. Tape Recorder
   f. Record Player
   g. Other
2. Instructional Supervision
   a. Classroom
      (1) individual
      (2) group
   b. Laboratory
      (1) individual
      (2) group
      (3) class
   c. Library
      (1) individual
      (2) group

Subject: English 30 School Type: Semestered

All figures are in percentage terms

Observation		Instruction	Materials Manipulation							Instructional Supervision							Clerical Writing	General Clerical Activity		Transition Teacher		Transition Student	
										a		b			c								
			a	b	c	d	e	f	g	(1)	(2)	(1)	(2)	(3)	(1)	(2)		(1)	(2)	%	No.	%	No.
I	a	6.0		74.0																20.0	4.0		
	b	63.9								21.7										14.4	3.0		
II	a	46.5								28.9							16.2		4.8	3.6	4.0		
	b	43.4								32.6							10.2		7.2	6.6	10.0		
III	a	71.1								15.7									2.4	10.8	5.0		
	b	91.6								4.8										3.6	5.0		
IV	a	77.8								10.2									3.6	8.4	7.0		
	b	88.0								2.4							1.8		5.4	2.4	3.0		
Mean		61.0		9.2						14.6							3.5		3.0	8.7	5.1		

Subject: English 30 School Type: Non-Semestered

All figures are in percentage terms

Observation		Instruction	Materials Manipulation							Instructional Supervision							Clerical Writing	General Clerical Activity	Transition	
										a		b			c					
			a	b	c	d	e	f	g	(1)	(2)	(1)	(2)	(3)	(1)	(2)		(1)	(2)	Teacher % No.	Student % No.
I	a	47.5								47.5										5.0 2.0
	b	30.0								60.0										10.0 4.0
II	a		65.0														25.0			
	b	15.0	63.7																	21.3 3.0
III	a										95.0									5.0 1.0
	b	5.0								77.5										17.5 2.0
IV	a	53.8								5.0								37.5		3.7 2.0
	b	61.3								16.2								10.0		12.5 3.0
Mean		26.6	16.0							25.8	11.9						3.1	5.9		9.4 2.1

Subject: Social Studies 30 School Type: Semestered

All figures are in percentage terms

Observation		Instruction	Materials Manipulation							Instructional Supervision							Clerical Writing	General Clerical Activity		Transition Teacher		Transition Student	
			a	b	c	d	e	f	g	a (1)	a (2)	b (1)	b (2)	b (3)	c (1)	c (2)		(1)	(2)	%	No.	%	No.
I	a	83.1																					
	b	78.3																					
II	a	66.9							60.0														
	b	54.9																					
III	a	36.2																					
	b	60.8																					
IV	a	19.3			49.4			49.4															
	b	8.4		84.4																			
Mean		51.0		10.5	6.2			6.2															

60.0 part of instruction

49.4 part c and f used together

Subject: Social Studies 30 School Type: Non-Semestered

All figures are in percentage terms

Observation		Instruction	Materials Manipulation							Instructional Supervision								Clerical Writing	General Clerical Activity		Transition Teacher		Transition Student	
										a		b			c									
			a	b	c	d	e	f	g	(1)	(2)	(1)	(2)	(3)	(1)	(2)			(1)	(2)	%	No.	%	No.
I	a	68.7								23.8											7.5	3.0		
	b	65.0								28.7											6.3	2.0		
II	a	90.0																			10.0	1.0		
	b									47.5								37.5		5.0	10.0	1.0		
III	a	91.2																			8.8	1.0		
	b	90.0																		6.2	3.8	2.0		
IV	a	22.5		62.5																	15.0	3.0		
	b	52.5								30.0										12.5	5.0	3.0		
Mean		60.0		7.8						16.2								4.7			8.3	2.0		

Subject: Mathematics 30 School Type: Semestered

All figures are in percentage terms

Observation		Instruction	Materials Manipulation							Instructional Supervision								Clerical Writing	General Clerical Activity		Transition Teacher		Transition Student	
										a		b			c									
			a	b	c	d	e	f	g	(1)	(2)	(1)	(2)	(3)	(1)	(2)			(1)	(2)	%	No.	%	No.
I	a	77.3								14.5											7.2	4.0		
	b	65.1	14.5							30.1										2.5	4.8	4.0		
II	a	80.7																7.2			9.6	3.0		
	b	38.6	37.3							54.2								1.2			6.0	3.0		
III	a	53.0								39.8								6.0			1.2	4.0		
	b	62.1								30.1											7.8	7.0		
IV	a	55.5								31.3											13.2	2.0		
	b	37.6								38.3								5.4			18.7	3.0		
Mean		58.7	6.5							29.8								2.5		0.3	8.5	3.8		

6.5 part of instruction

Subject: Mathematics 30

School Type: Non-semestered

All figures are in percentage terms

Observation		Instruction	Materials Manipulation							Instructional Supervision							Clerical Writing	General Clerical Activity		Transition Teacher		Transition Student	
			a	b	c	d	e	f	g	a (1)	a (2)	b (1)	b (2)	b (3)	c (1)	c (2)		(1)	(2)	%	No.	%	No.
I	a	88.7																	7.5	3.8	2.0		
	b	65.0								26.2							5.0			3.8	5.0		
II	a									82.5							10.0		7.5	1.0			
	b	36.2								50.0							5.0			8.8	3.0		
III	a	12.5								82.5										5.0	1.0		
	b	27.5								70.0										2.5	1.0		
IV	a	22.5								72.5										5.0	2.0		
	b	40.0								55.0										5.0	2.0		
Mean		36.5								54.8							2.5		0.9	5.2	2.1		

Subject: Biology 30

School Type: Semestered

All figures are in percentage terms

Observation		Instruction	Materials Manipulation							Instructional Supervision							Clerical Writing	General Clerical Activity		Transition Teacher		Transition Student	
			a	b	c	d	e	f	g	a (1)	a (2)	b (1)	b (2)	b (3)	c (1)	c (2)		(1)	(2)	%	No.	%	No.
I	a	74.6								12.1										13.3	4.0		
	b																						
II	a	27.7	8.4							53.0							15.7			3.6	3.0		
	b																						
III	a	12.0								10.8			62.7							14.5	4.0		
	b	-																					
IV	a	3.6								3.6			77.2				7.3			8.3	4.0		
	b																						
Mean		29.5	1.1							19.8			35.0				5.7			9.9	3.7		

Subject: Biology 30 School Type: Non-semestered

All figures are in percentage terms

Observation		Instruction	Materials Manipulation							Instructional Supervision								Clerical Writing	General Clerical Activity		Transition Teacher		Transition Student	
			a	b	c	d	e	f	g	a (1)	a (2)	b (1)	b (2)	b (3)	c (1)	c (2)			(1)	(2)	%	No.	%	No.
I	a	77.5											17.5								5.0	1.0		
	b	87.5			25.0				25.0												12.5	3.0		
II	a	86.2								6.3											7.5	2.0		
	b	67.5								23.8										2.2	6.2	3.0		
III	a									7.5		35.0								42.5	15.0	2.0		
	b	10.0										70.0								12.5	7.5	2.0		
IV	a	91.2																			8.8	1.0		
	b	90.0							87.5												10.0	2.0		
Mean		63.7			3.1				14.1	4.7		13.1	2.2							7.2	9.0	2.0		

3.1 + 14.1 used with instruction

Subject: Chemistry 30

School Type: Semestered

All figures are in percentage terms

Observation		Instruction	Materials Manipulation							Instructional Supervision							Clerical Writing	General Clerical Activity		Transition Teacher		Transition Student	
										a		b			c								
			a	b	c	d	e	f	g	(1)	(2)	(1)	(2)	(3)	(1)	(2)		(1)	(2)	%	No.	%	No.
I	a	80.7							23.5											19.3	7.0		
	b	19.2															63.5			16.8	2.0		
II	a	86.7							60.8											13.3	6.0		
	b	6.7								90.3										3.0	2.0	1.0	
III	a	73.0								16.8							5.4			4.8	4.0		
	b	47.0	34.0							1.4							1.4			16.2	3.0		
IV	a	13.3										74.7					12.0				3.0		
	b	41.6							24.1	56.0							2.4				6.0		
Mean		46.1	4.3						13.5	20.6		9.3					10.6			9.2	4.1		

13.5 used with instruction

Subject: Chemistry 30

School Type: Non-semestered

All figures are in percentage terms

Observation		Instruction	Materials Manipulation							Instructional Supervision							Clerical Writing	General Clerical Activity		Transition			
										a		b			c					Teacher		Student	
			a	b	c	d	e	f	g	(1)	(2)	(1)	(2)	(3)	(1)	(2)		(1)	(2)	%	No.	%	No.
I	a	45.0								37.5										17.5	2.0		
	b	15.0											80.0							1.2	2.0	3.8	1.0
II	a	37.5								50.0									2.5	10.0	2.0		
	b	73.7								25.0										1.3	2.0		
III	a	82.4															11.3			6.3	3.0		
	b	96.3															3.7						
IV	a	5.0								60.0							13.7		16.3	5.0	3.0		
	b	42.5								12.5							32.5			12.5	3.0		
Mean		49.7								23.1			10.0				7.6		2.3	6.7	2.1	0.5	0.1

Subject: French 30 School Type: Semestered

All figures are in percentage terms

Observation		Instruction	Materials Manipulation							Instructional Supervision							Clerical Writing	General Clerical Activity		Transition Teacher		Transition Student	
										a		b			c								
			a	b	c	d	e	f	g	(1)	(2)	(1)	(2)	(3)	(1)	(2)		(1)	(2)	%	No.	%	No.
I	a	87.4	36.7							3.6										9.0	4.0		
	b	70.5															21.7			1.8	3.0	6.0	1.0
II	a	91.6								6.0										2.4	3.0		
	b	54.8					30.1			3.0				30.1			1.8			10.3	4.0		
III	a	18.1								74.7							4.8			2.4	5.0		1.0
	b	56.6								39.8										3.6	3.0		
IV	a	60.9								2.4	27.1						5.4		1.8	2.4	4.0		
	b	50.0								13.9							31.9			4.2	3.0		
Mean		61.2	4.6				3.7			17.9	3.3			3.7			8.2		0.2	4.5	3.7	0.8	0.3

4.6 + 3.7 used as part of instruction

Subject: French 30

School Type: Non-semestered

All figures are in percentage terms

Observation		Instruction	Materials Manipulation							Instructional Supervision							Clerical Writing	General Clerical Activity		Transition Teacher		Transition Student	
										a		b			c								
			a	b	c	d	e	f	g	(1)	(2)	(1)	(2)	(3)	(1)	(2)		(1)	(2)	%	No.	%	No.
I	a	81.2								12.5										6.3	3.0		
	b					95.0							46.2				45.0			8.8	3.0		
II	a	97.5																		2.5	3.0		
	b	35.0								62.5										2.5	1.0		
III	a			85.0																15.0	1.0		
	b	80.0	80.0							12.5								2.5		5.0	2.0		
IV	a	61.2				32.5				20.0								11.3		7.5	3.0		
	b					92.5						18.8		41.3			8.7	23.7		7.5	3.0		
Mean		44.4	10.0			27.5				13.4		2.3		10.9			6.7	4.7		6.9	3.4		

10 + 27.5 used as part of Instruction